EXCAVATING ENGINEER

FOUNDED 1905

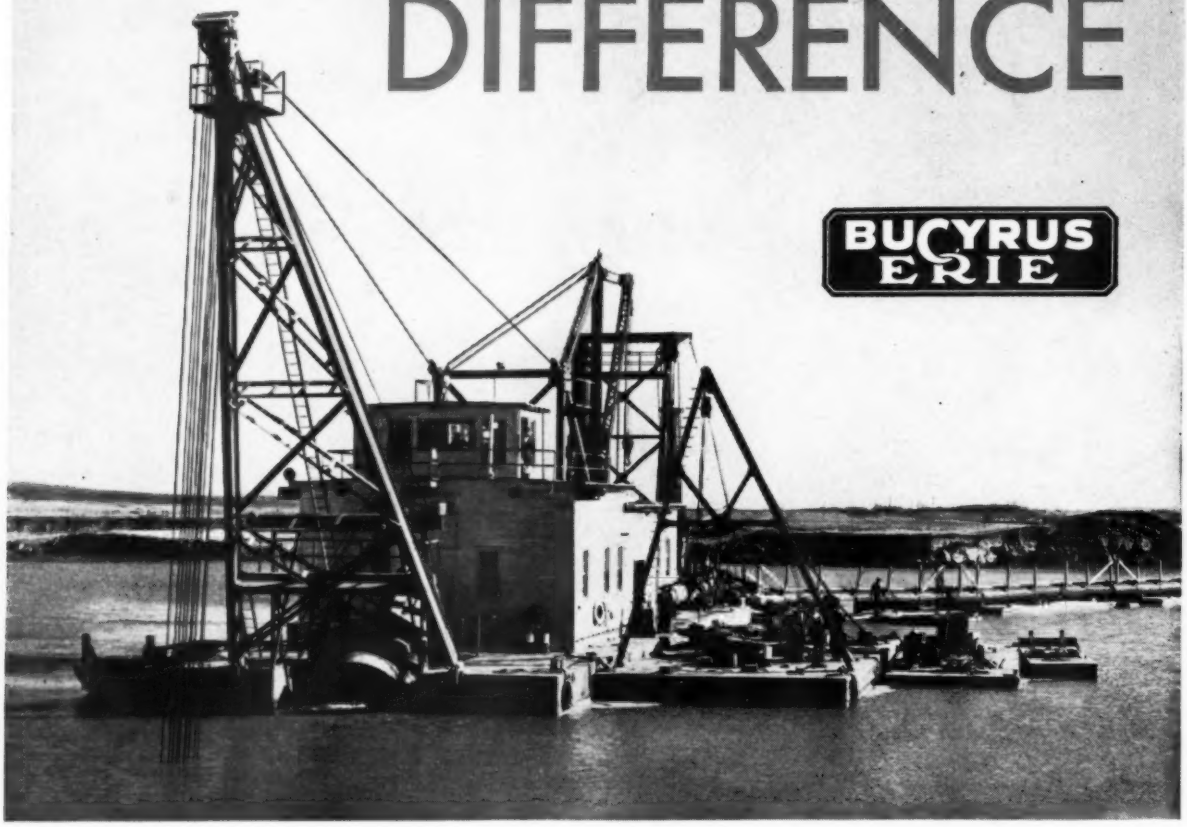
TRANSPORTATION LIBRARY

• Construction of Kentucky's Wolf Creek Dam — "Colossus of the Cumberland" — nears the halfway point. Story on page 20.

FIGHT INFANTILE PARALYSIS

Vol. XLII January, 1948 Number 1

DESIGNED *with a* DIFFERENCE



When It's Designed for Your Job!—

For widening rivers, deepening harbors, excavating canals, land reclamation — whatever the work that requires a hydraulic dredge — Bucyrus-Erie is prepared to design and build a machine that will answer your needs with high-quantity, low-cost output.

To the solution of your dredging problems, Bucyrus-Erie engineers bring a background of dredge-building experience dating back over 60 years, during which Bucyrus-Erie has been identified with the outstanding improvements in hydraulic, placer and dipper dredge design.

You can be sure that the dredge you order will be designed specifically for the work you have . . . designed to give you the production you need at lowest possible operating cost.

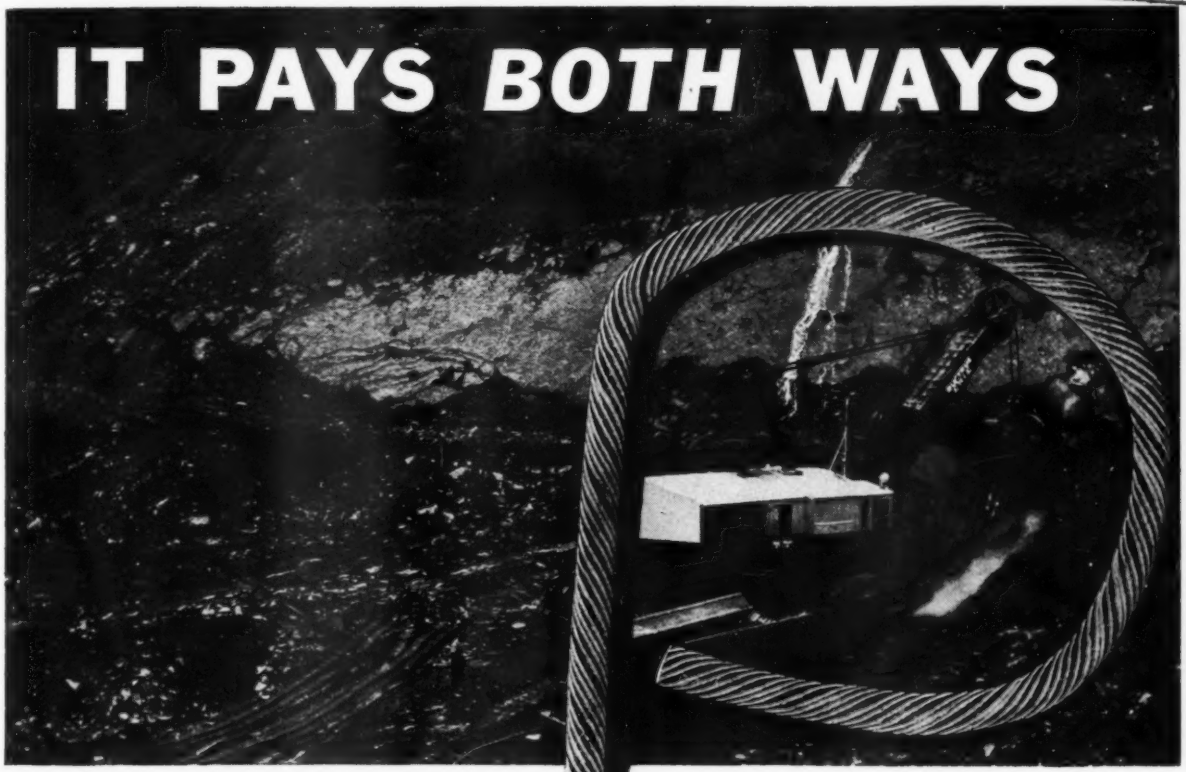
Add to this fund of practical knowledge the unparalleled manufacturing facilities of Bucyrus-Erie — most complete of any in the industry — and the skill of expert craftsmen working with the best in modern tools and materials, and the result is bound to be a dredge that's "years ahead" . . . a dredge you can depend on for efficient, profitable service.

17D47C

BUCYRUS-ERIE COMPANY, SOUTH MILWAUKEE, WISCONSIN

TRANSPORTATION LIBRARY

IT PAYS *BOTH* WAYS



when you shoot with RIMACORD

Better fragmentation from blasting keeps shovels working — reduces the yardage digging cost. In strip mining this means overburden comes off faster, making more money for the contractor. In quarrying it speeds up the operations all along the line.

Every Primacord hookup works to this end in two efficient ways. First, branch lines down the holes are in direct contact with every cartridge. When a shot is fired, every cartridge in the load is initiated to its full power. Second, the Primacord trunk line can be laid out to get proper relief of burden where it's wanted, when it's wanted. That gives each charge the split-second it needs to deliver at peak effectiveness.

Primacord offers extra advantages when the weather gets tough. Branch and trunk lines hook up with easily tied square knots and half hitches. And because Primacord is insensitive to stray currents, it's the logical detonator to use wherever high voltage electrical equipment is at work.

There's a grade of Primacord suitable for every need. Your explosives supplier will give you the full Primacord story — or you can write us direct.

THE ENSIGN-BICKFORD CO., SIMSBURY, CONN.
Also* Ensign-Bickford *Safety* Fuse • *Since 1836

Take the DEAD END STREETS Out of Your Thoroughfares

. . . speed up your jobs with dependable Le Roi Airmaster compressors and Le Roi-Cleveland Air Tools

Air power costs you less money when you make it with any of the 7 sizes of Airmasters. You get your jobs done faster, too. Here's why:

Higher average working pressures — the patented fuel-saving Econotrol adjusts engine speed to the demand for air. Fuel is saved, wear-and-tear reduced, and higher pressures maintained. Air tools do more work.

High-speed towing — automotive steering and semi-elliptical spring suspension get you to and around the job faster, saving valuable time.

Tireless dependability — Airmasters — with their sturdy unit construction, extra-heavy balanced crankshafts, cushioned valves, pressure lubrication — keep plugging away. Down-time is less. Job schedules are completed sooner. Larger profits go into your pocket.

This efficiency saves you both time and money. But you can get still more out of your Airmasters by teaming them with Le Roi-Cleveland Air Tools. Le Roi Paving Breakers, for example, hit hard, yet they are easy-holding. Our hand-held drills, the 30-lb. H-66, the 45-lb. H-10, and the 55-lb. H-111, have the holding, the drilling speed, and rotation that produce more feet per shift. For holes from 20 to 40 feet in depth, your best bet is the Le Roi-Cleveland wagon drill.

Get all the money-saving facts from your Le Roi distributor. Write us today for latest literature.

Airmaster
Portable Air Power at its BEST!

LE ROI COMPANY
MILWAUKEE 14, WISCONSIN
NEW YORK • WASHINGTON • CLEVELAND • BIRMINGHAM
MILWAUKEE • TULSA • BUTTE • SAN FRANCISCO

EXCAVATING ENGINEER

FOUNDED 1905

Contents

Vol. XLII No. 1 **January, 1948**

Editorial: An Urgent Need for Understanding 13

Many people today are seriously misinformed concerning the Taft-Hartley Law — one of the most misunderstood in our history. Your help in giving the facts wider circulation is important.

North Carolina Alters U. S. 29 14

Labor shortage, record rain fail to delay relocation job near Greensboro as Pullen and Owens scrapers cut improved route in heart of the tobacco country.

Colossus of the Cumberland — by Albert E. Becker 20

This article describes construction methods used at Wolf Creek Dam by the Jones-Wright Construction Company, U. S. Engineer Corps, and the Cumberland Quarries Incorporated to build the largest multipurpose dam in America. The structure will extend for one mile across the Cumberland river near Jamestown, in southern Kentucky.

Obituary: W. H. Nichol 25

Equipment You Ought to Know About 26

Field Notes 30

Shots from the Firing Line 32

Estimate 20% Increase in New Construction in 1948 . . 32
Need New S. D. Road Funds . . 32
Conn. Highway Program 34
"Soothing" Detour Sign 34
Spend $13 Million in Nine Months on Oklahoma Roads 34
New Standard Dredging Jobs . 34
Kentucky's '47 Program Ranked Fourth in Nation 36
Level 30 Acres for Tacoma Housing Project 36
Kentucky Takes Over 345 City, County Road Miles . . 38
Largest Secondary Road Fund for Virginia in '48 38

Not in the Contract 50

New Trade Literature 52

Notes from the Manufacturers 56

January Advertisers

American Steel & Wire Co. 12
American Steel Dredge Co., Inc. 47, 53
Bethlehem Steel Company 4
Blaw-Knox Company 34
Bucyrus-Erie Company . . 2nd Cover 9, 33, 43, 47, 51
Columbia Steel Company 12
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div. . . 39
Detroit-Diesel Engine Division, General Motors Corp. 55
Ensign-Bickford Co., The 1
Erie Steel Construction Co. 44
Euclid Road Machinery Co., The . . 31
For Sale (Classified) 54
Gatke Corporation 40
General Electric Company 8
General Motors Corp., Detroit Diesel Engine Div. 55
General Tire & Rubber Co. 41
Haiss Mfg. Co., Inc., George . . . 52
Hayward Company, The 47
Hough Company, Frank G. 4th Cover
Hyster Company 45
International Harvester Company 28-29
Jahn Co., C. R. 47
Johnson Company, C. S. 6-7
Jones & Laughlin 10
Koehring Company 6-7
Le Roi Company 2
LeTourneau, Inc., R. G. 48-49
Moon Mfg. Co. 46
Northwest Engineering Co. 5
Osgood Company, The 35
Owen Bucket Company, The 42
Page Engineering Co. 11
Rogers Brothers Corporation 43
Sauerman Brothers, Inc. 38
Sheppard Co., Inc., R. H. 707
Standard Oil of California 3rd Cover
Timken Roller Bearing Co., The 37
U. S. Steel Company 12
Wall Colmonoy Corporation 44
Wayne Crane Division, American Steel Dredge Co., Inc. 53
Wellman Engineering Co., The . . 36
White Manufacturing Co. 42
Wickwire Spencer Steel Division, The, Colorado Fuel & Iron Corporation 39

Published Monthly by
THE EXCAVATING ENGINEER PUBLISHING COMPANY
South Milwaukee, Wisconsin, U. S. A.

E. M. HEUSTON, Publisher — P. H. WOODS, Editor
D. B. REED, JR., Manager — M. B. JAEGER, Associate Editor
M. J. BARGENQUEST, Sales Manager — E. W. ARNDT, Art Editor
J. C. STODOLA, Assistant Editor

ular Subscription (payable in advance): 25 cents per copy, $2.50 a year: Canada d foreign, subject to publication policy, $3.50 per year. Special subscription: on written request on company letterhead this publication will be sent free of rge to companies, executives and supervisors engaged actively in excavating.

ECA Member Controlled Circulation Audit

COPYRIGHT 1948 BY THE EXCAVATING ENGINEER PUBLISHING COMPANY

A SLOGAN

our customers gave us

"When you think wire rope . . . think Bethlehem." We've been saying that for a long time—but many users beat us to the punch. They were "thinking Bethlehem" long before we ever used that slogan.

Some of our customers . . . who started with small trial orders . . . are now using thousands of feet annually. There's no mystery about it. Highest-quality product, careful attention to customer needs—that's the answer.

No matter what type of wire rope you want, Bethlehem makes it. You cannot buy finer ropes anywhere. You cannot get a better, more friendly kind of field service. That's why we so often hear those welcome words, "The rope on this job is 100 per cent Bethlehem."

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL
Not how much, but how well...
BETHLEHEM WIRE ROPE
is carefully made by craftsmen of long experience. Quality is never sacrificed for quantity production.
BETHLEHEM
WIRE ROPE

When you think WIRE ROPE . . . think BETHLEHEM

TOUGH GOING all the way!

...but NORTHWESTS are built to eat it up!

Look at this picture—*rock* all the way, both for the draglines and the shovel. Northwests are built to do the toughest jobs that Shovels, Cranes, Draglines or Pullshovels have to do. The rotating base and crawler base are heavy steel castings. Cast machinery side frames maintain shaft alignment and reduce wear. Ball and roller bearings assure the maximum delivery of power. Uniform Pressure Swing Clutches are cool running—long lifed—smooth operating. The Cushion Clutch protects operating machinery from the effects of shock overload when the dipper or bucket "hangs up" on an immovable rock. This combination of advantages along with other Northwest features make the Northwest a real Rock Machine.

When you have a machine that is built for the tough jobs you don't have to worry about the profit side of the ledger. Northwests are money makers. That is proved by the fact that one out of every three Northwests sold is a repeat order in the hands of successful contractors. Plan now to follow the Northwest Crowd.

NORTHWEST ENGINEERING COMPANY
1506 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

Follow the NORTHWEST CROWD
Still the Standard toward which others build!
If you have a REAL ROCK SHOVEL you won't have to worry about output in dirt

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

DUMPTOR no-turn shuttle STEPS UP OUTPUT 11.6%

You save 2 slow turns every trip ... travel at same speed both ways

You save turn time . . . gain more productive haul time on shuttle hauls with Dumptors because Koehring constant-mesh transmission makes the same three speeds available in either direction. Time studies prove that elimination of two turns every trip — one at the loading unit, one at the dumping unit — often saves as much as 30 seconds every round trip. On a 1,000' haul (15.4 round trips per hour) Dumptor No-Turn Shuttle Operation gains 7.7 minutes every hour. Table at right quickly shows you what this factor alone can mean to you in extra yardage gained.

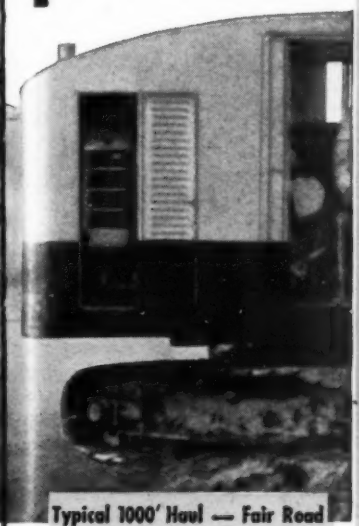
What's more — fast, easy spotting and 1-second gravity dump keep production high. For faster hauling on your off-the-highway jobs, see your Koehring distributor TODAY.

FAST, EASY SPOTTING... SAVES HAUL TIME... DUMPS

KOEHRING HEAVY DUTY

KOEHRING COMPANY

Haul per UNIT



Typical 1000' Haul — Fair Road

	No-Turn Shuttle Operation	2-Turn Shuttle Operation
Time Per Trip	3.9 min.	4.4 min.
Trips Per Hr.	15.4	13.6
Yards Per Hr. (4.5 Yd. Payload)	69	61

YARDAGE GAINED - 8 yds. (11.6%) per unit per hour on 1000' haul.

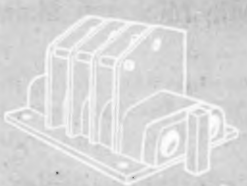
IN ONE SECOND

MILWAUKEE 10, WISCONSIN

Johnson Faster Operation for EXTRA TONNAGE

Most Sizes Now Available for Quick Delivery from Distributor's Stock

¾ to 2½ yard General Purpose Wide Rehandling Heavy-Duty Digging.



FASTER OPERATION, because lower sheaves are angle mounted to maintain natural cable alignment.

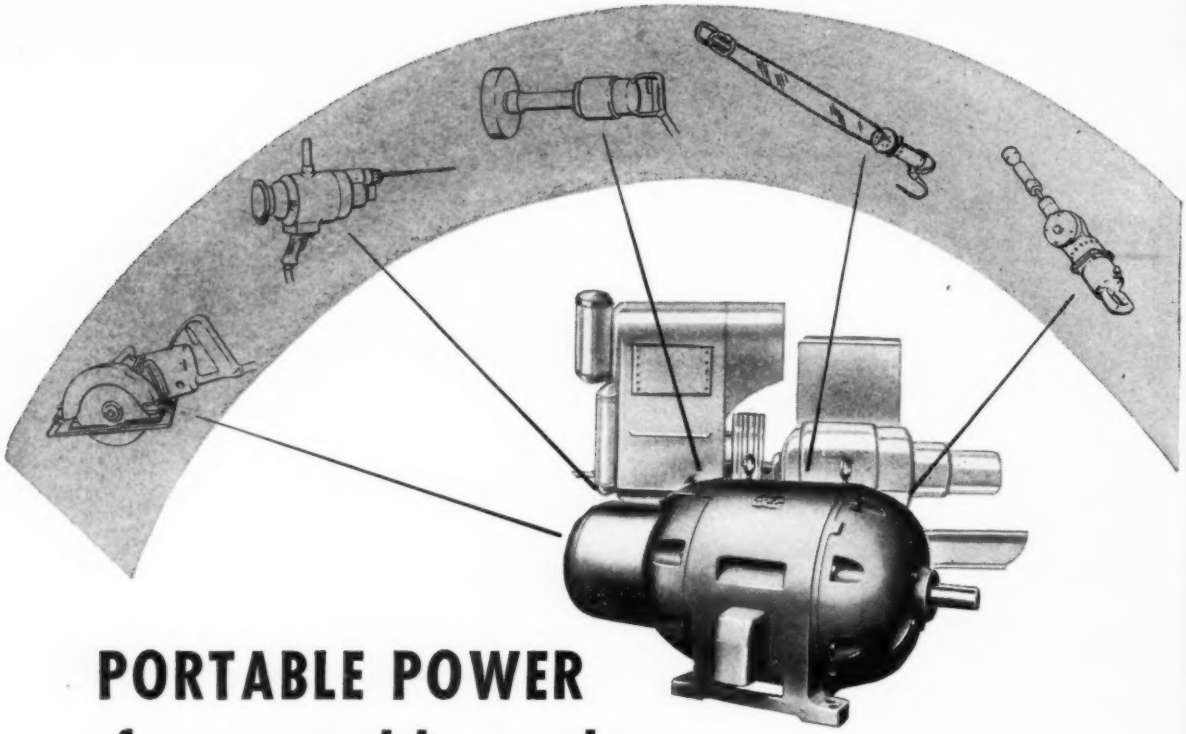
FASTER OPERATION, because double hinge construction gets big bites with fast closing in any material.

FASTER OPERATION, because sealed needle bearings on closing sheaves eliminate friction.

FASTER OPERATION, because all-welded clams, smooth inside and out, dig and dump with less resistance.

THE C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY, • CHAMPAIGN, ILLINOIS



PORTABLE POWER for portable tools

Gas- or Diesel-driven Generators Work Long Hours in any Location with Minimum Maintenance

Muscle-saving, time-conserving power tools are multiplying like rabbits these days. Why? Because they increase labor's productivity, speed construction and raise profit margins.

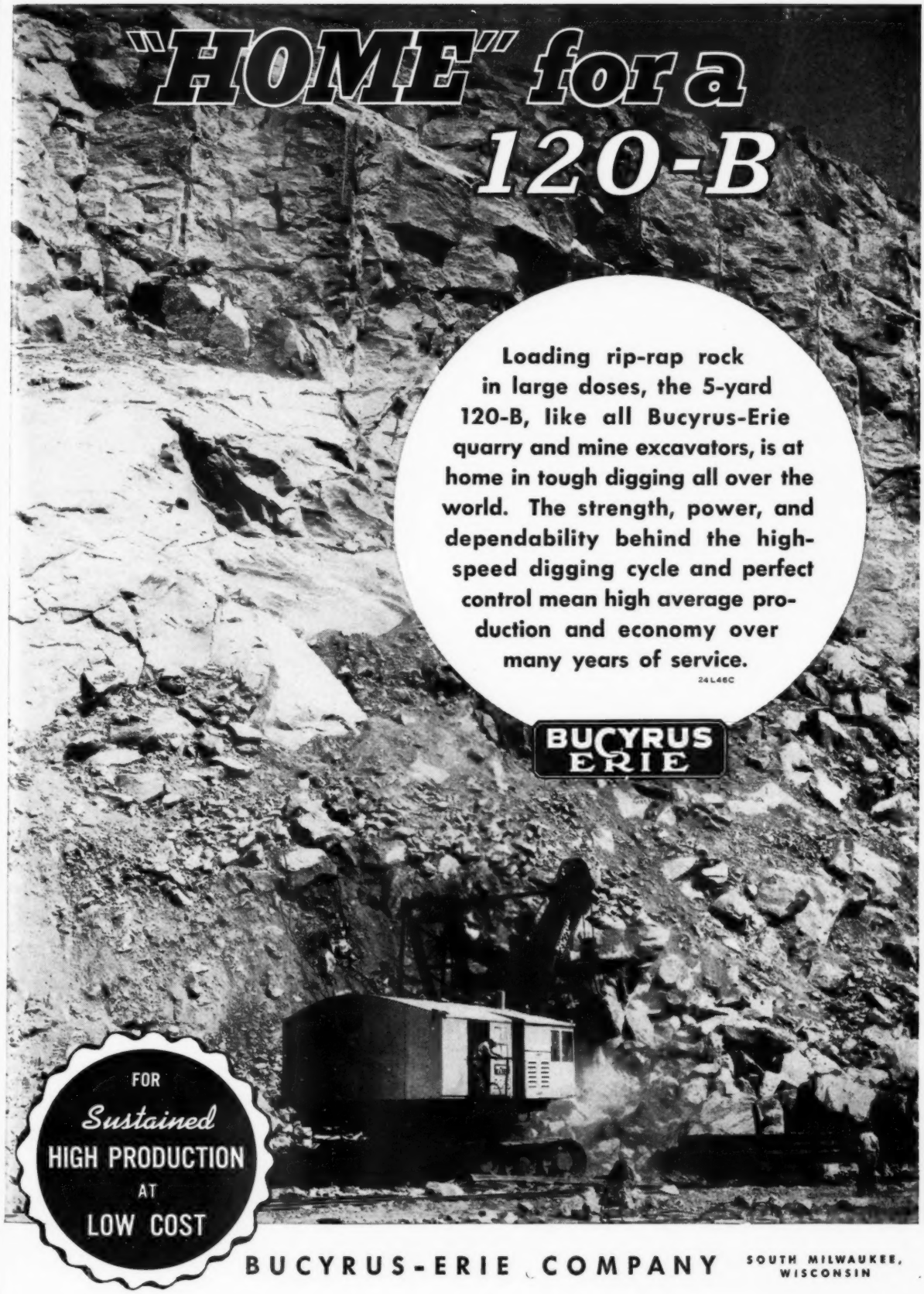
ELECTRIFIED CONSTRUCTION
BETTER PRODUCT
LOWER COST

To keep these tools sawing, grinding, drilling, tamping and sanding you'll need reliable, low-cost power such as derived from General Electric gas- or diesel-driven generators. The generating unit should be lightweight and easily portable so as not to limit the portability of the tools. Automatic regulating characteristics of G-E generators allow you to work right up to the load limit without watching instruments or risking damage to the generator. Many years of research and experience go into each piece of General Electric equipment you buy.

For these reasons we believe you will profit by specifying G-E on your next portable power plant. Make use of all the portable tools available which fit your operation, and be sure the heart of your power system bears the General Electric name. *Apparatus Department, General Electric Co., Schenectady 5, N. Y.*

GENERAL ELECTRIC

655-64


"HOME" for a 120-B
Loading rip-rap rock in large doses, the 5-yard 120-B, like all Bucyrus-Erie quarry and mine excavators, is at home in tough digging all over the world. The strength, power, and dependability behind the high-speed digging cycle and perfect control mean high average production and economy over many years of service.
24L46C
BUCYRUS ERIE
FOR Sustained HIGH PRODUCTION AT LOW COST
BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

Reduce Time and Costs with

J&L WIRE ROPE

PERMASET-PREFORMED

Measure your wire rope costs in terms of time saved through elimination of delay and you will find that it costs no more to use the best—in fact it is saving money on many jobs. Our engineers will be glad to make a survey for you and make recommendations that will give you greater efficiency from your equipment. Write for information.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, PENNSYLVANIA

J&L *Precisionbilt* PERMASET PRE-FORMED WIRE ROPE

No other dragline bucket

...can match the digging capacity of a PAGE AUTOMATIC!

Page AUTOMATICS dig right in at the first pull of the drag rope and get a full load within one to three bucket lengths regardless of the depth—20 ft., 100 ft., or more. This means that most of your operations are under or near the end of the boom point where the minimum amount of power is required for hoisting the load.

Perfect balance of the AUTOMATIC assures positive control whether loading or dumping. Quick loading features of AUTOMATIC buckets mean less wear and maintenance on the bucket, cables, and the dragline as well as minimum operator fatigue.

Hundreds of dragline operators in all kinds of digging have found that their AUTOMATICS dig more yards at a lower cost per yard than any other buckets they have ever used. For all the facts, see your construction equipment distributor or write for big, new free booklet, "How to Get the Most Out of Your Page Automatic Dragline Bucket."

PAGE ENGINEERING COMPANY
Clearing Post Office
Chicago, Ill.

PAGE *Automatic*

DRAGLINE BUCKETS *and* WALKING DRAGLINES

men who know the ropes

take Tiger Brand every time!

● And, it's easy to see why . . . because U·S·S American TIGER BRAND Wire Rope possesses not just one or two, but *all* of the qualities needed to insure smooth performance, low-cost maintenance and long service life! Made to close tolerances and unvarying quality standards from the finest high tensile strength steel wire, TIGER BRAND combines strength, toughness, and flexibility to your greatest advantage. You can't buy better wire rope at any price! Immediate delivery of all sizes in either Excellay Preformed or non-preformed construction. See your supplier today. *Don't get caught with your lines down!*

EXCELLAY PREFORMED

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago, New York
COLUMBIA STEEL COMPANY
San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham,
Southern Distributors
United States Steel Export Company, New York
UNITED STATES STEEL

THE BIG DEMAND IS FOR TIGER BRAND

An Urgent Need for Understanding

Many people today are seriously misinformed concerning the Taft-Hartley Law – one of the most misunderstood in our history. Your help in giving the facts wider circulation is important.

ANYONE who has followed the course of our Congress for the past 158 years can recall many instances where dire calamity was predicted if various laws were enacted. Not only did the expected calamities fail to materialize, but in many cases, the most bitter prophets of disaster eventually became leading defenders of these same laws.

In the months that have passed since passage of the Taft-Hartley Act we have seen no uprising of "oppressed" workers predicted by some of those who attempted to defeat the bill. A recent independent public survey has perhaps shown the reason — 60 to 86% of all workers queried approved the 10 major new provisions of the bill. Union members also approved all provisions except one — the article outlawing closed shops — and even this was approved by 48% of the union members and by 60% of all workers.

Yet, when asked whether the law should have been passed, 54% of all employees in the survey and 64% of all union members said "no"! Obviously there are many who do not know what the Taft-Hartley Law really is.

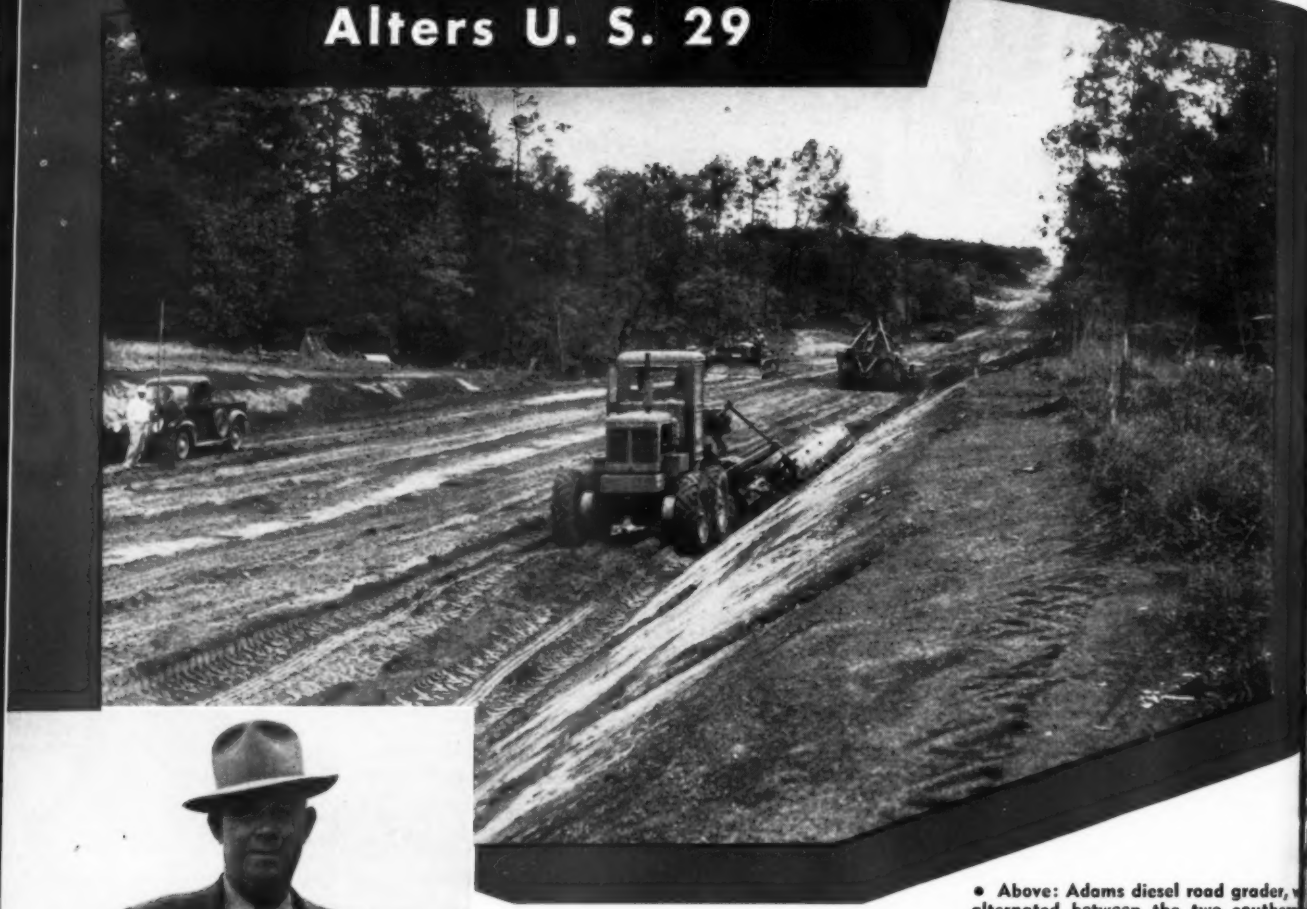
All of us who have a stake in preservation of a free society also have an obligation to understand the true meaning of this law's provisions. Further, we must be prepared to take an active part in making this picture clear to others. We must do our part to combat the propaganda of those who have misrepresented and continue to misrepresent the Taft-Hartley Law.

It is quite possible that if the Wagner Act (which the Taft-Hartley Act amends, and certainly does not destroy) had contained the exact provisions of the present law, it would still have been hailed by labor as a good and liberal piece of legislation — a great victory for them. A general realization of this fact is needed in this country today.

If any law is truly representative of the desires of American citizens, it must be this Labor-Management Relations Act — passed twice by large majorities in both houses of Congress after long and careful consideration. This law deserves a fair trial on its own provisions — not those falsely imparted to it by the selfish and unscrupulous.

Your help is important — a good way to start is to find out what the law is and does and give this information as wide distribution as possible among your friends and fellow workers. For a fair and impartial analysis, we suggest you write to your congressman for Senator Ball's (Minnesota) analysis of the Taft-Hartley Law.

North Carolina
Alters U. S. 29



• Above: Adams diesel road grader, w alternated between the two southern sections of the job, sideslopes in area w 30-ft. cut is being made. Stretching the background is road already grade

• W. P. Owens took personal charge of the Route 29 project for the Pullen and Owens organization.

THE state of North Carolina, alert to the need for keeping its roads geared to the present heavy volume of vehicular traffic within its borders, is maintaining its place with the leaders among southern states in the volume of new highway construction planned for this year and 1948. An example of its increased program for improved highways is the straightening of U. S. Highway 29, an important, heavily-traveled link between the tobacco country and Washington, D. C.

Work has already begun on the portion of Route 29 running through Guilford county from Greensboro to the Rockingham county line, with the end result to be a dual 24-ft. highway of 8-in. uniform concrete pavement with a 30-ft. median strip. Contracts for paving have not yet been awarded.

Letting of $276,397 contract to the Pullen and Owens Company, Nashville, Tenn., for grading the west lane of the proposed four-lane highway was the initial move toward the construction of this dual route. Bidding was extremely close, there being no more than $10,000 difference in the lowest six bids.

The contract awarded Pullen and Owens covers only the grading of the west lane, and involves 716,000 yds. of excavation, 63 acres of clearing and 26 acres of grubbing, moving 29 building units from the right of way; and the construction of 6728 ft. of 15 to 60-in. reinforced concrete pipe and 1168 ft. of extra-strength 24 to 66-in. concrete pipe. W. P. Owens has personal charge of the project for the Nashville firm.

At the time of the reporter's

Labor shortage, record rain fail to delay relocation job near Greensboro as Pullen and Owens scrapers cut improved route in heart of the tobacco country.

visit in late September, the job was 65% complete and Owens expected operations to be completed well within the time limit of 225 days, barring serious holdups or accidents. A 7.29-in. rainfall on September 24, heaviest in the history of Greensboro, caused floods in the region and seriously threatened the entire water supply of the city when the dam at the Lake Brandt water reservoir was breached by overwhelming flood waters. Although earthmoving equipment on the Pullen-Owens project was stalled for a day or two, clearing continued and there was no substantial delay.

Pine forests and tobacco farms characterize the gently rolling countryside through which Route 29 runs, and curing bins dot the landscape—for this is the heart of the bright-leaf tobacco belt. The soil is, for the most part, the familiar red clay seen in many southern states.

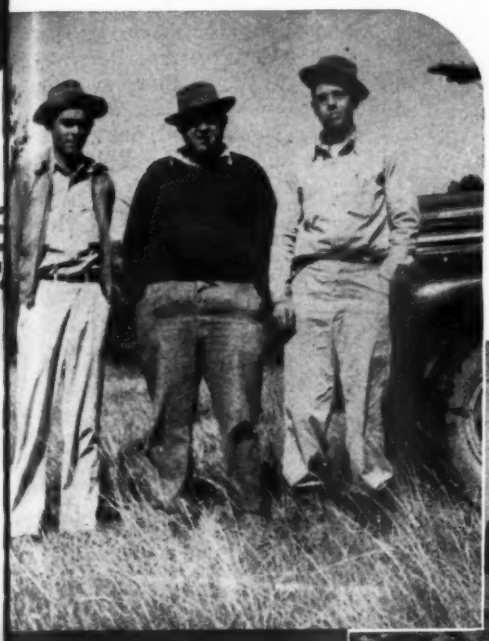
The present 29, a 19-ft. wide strip of concrete and blacktop, winds its way through Guilford county somewhat in the manner of a snake's travels. It evidently followed the path of least resistance, and although the grades are not steep, the curves are plentiful and sharp enough to slow down modern traffic considerably.

The new road will have no grades steeper than 3.5 percent, with the exception of one short section with a 5 percent grade. It will cut through hills to avoid curves, thus following more closely the axiom regarding the shortest distance between two points. Only those portions of the old route will be used which fall along the new path. The dual route will be 12.446 miles long from Greensboro to the county line, approximately two miles shorter than the old way.

Operations began with clearing the right of way. Working immediately ahead of the earthmoving groups was a crew of laborers under Bill Payne, labor foreman, who has worked for Owens for more than a decade. Payne originally recruited a force of 30 men from Greensboro and vicinity for the pioneering, but, because of the shortage of common labor, was having difficulty maintaining an adequate crew (at one time the supply of labor dropped to 11 men). Despite these drawbacks, however, the clearing was keeping the right of way ready for grading by the scrapers.

An International TD-18 tractor, mounted with Bucyrus-Erie cable-operated bulldozer and with a boom attachment made in the Pullen-Owens home shops, was performing the heavy work, uprooting stumps and clearing felled trees. The work of cutting down trees was aided considerably by a 36-in. Disston portable power saw with 11 h.p. Mercury engine. Under terms of the contract all brush not hauled away is burned.

Beginning simultaneously with the clearing was the moving of



• Pullen and Owens' field lieutenants are (from left) R. C. Byrd, Equipment Foreman, Wm. Payne, Labor Foreman, and C. A. Cook, Master Mechanic.

• Two of the three Bucyrus-Erie 10-yd. scrapers, drawn by International TD-18 tractors, on the middle section of the job. One has just finished loading and is beginning the 1600-ft. haul. The other will load in the background.

the building units from the right of way. Twenty-nine structures, including homes, dairy barns, and tobacco storage bins, were moved for Pullen and Owens by H. A. Beaver, Statesville, N. C., housemover, without incident and without interfering with the clearing or grading. For the first time, a state contract included the housemoving with the grading.

Project Needs Little Blasting

Only about 20,000 yds., mostly soft sand rock, had to be blasted before moving. Sullivan 58 jack hammers with 1½-in. bits put down holes, which were from two to six feet deep. A Jaeger 105-cu. in. portable compressor furnished power to the jack hammers. Loaded into the holes were from one to five 1¼-in. sticks of Ameri-Cyanamid explosives. A total of about 2000 lbs. was used, mostly in ditch lines and in dislodging boulders.

Two rippers, a Bucyrus-Erie CR-2 and a Gar Wood 10, were held in readiness to loosen earth for the scrapers, but were not needed extensively in the red clay and gray loam. A vein of sandstone was encountered running across a cut on the north end of the project, necessitating some use of one of the rippers, but, in general, scrapers were loading easily without preliminary loosening of dirt.

Yardage Credited to Pushers

The main problem faced by Owens in carrying out his contract appeared to be the long hauls involved in several instances for his scrapers. To make up the handicap imposed by the distances, Owens was making judicious use of pushers to speed loading of material, which, when wet, became exceedingly sticky. Owens credits the satisfactory yardage flow to the use of pushers, adding that he wouldn't use scrapers without them even on short hauls.

To avoid piling up too much equipment in one location, where crowded conditions would only impede the work, the earthmoving equipment was divided into three sections, with the first group working just outside the Greensboro city limits. Here a 20-yd. Gar Wood scraper drawn by a Caterpillar D-8 and a 16-yd. LeTourneau scraper, drawn by a Caterpillar RD-8, were beginning a 20-ft. fill over a cattle pass (which was part of the 66-in. concrete pipe set up previously). The haul here was a short one—not over 450 ft.—and was on a very slight downgrade. An International TD-18 with Bucyrus-Erie cable-operated bulldozer was being utilized as a pusher, helping to load both scrapers. A Bucyrus-

• A rod-man discusses a cut with Owe (white shirt) and a bystander. LeTourne scraper and Caterpillar RD-8 have j made a turn and will begin loading in t area to the right of the picture.

• Below: Bucyrus-Erie CR-2 ripper gets short workout on middle section. The International TD-18 temporarily used to draw it is equipped with pusher plate made by Pullen and Owens for its usual job of assisting scrapers in loading.

• Right: Owens fitted a special boom attachment to this International TD-18 with Bucyrus-Erie cable-operated bulldozer. The rig performed the heavy work in clearing operations.

This Gar Wood ripper is called into service with a Caterpillar D-7 (equipped with LeTourneau bulldozer) to break up a layer of sandstone in a 22-ft. cut. One of the tobacco storage bins typical of this section of the country is in background.

Erie tamping roller pulled by an International TD-35 was compacting the fill. The contract calls for a maximum layer of six inches of fill to be laid down before compaction.

About a half-mile to the north three 10-yd. (struck) Bucyrus-Erie scrapers drawn by International TD-18's and a Gar Wood 20-yd. scraper pulled by a Caterpillar D-8 were making a 30-ft. fill which was compacted by a Bucyrus-Erie sheepsfoot roller drawn by a Caterpillar RD-6. It was at this point that one of the longest hauls on the project was encountered, a distance of about 1600 ft., which was soon to be increased to about 2000 ft.

Two International TD-18's with home-made pusher plates were helping the loading, and the production, about 300 yds. of dirt moved per hour on an ordinary day's work, was considered highly satisfactory, in view of the fact that the material being moved was sticky, wet, red clay. The cut from which this fill was taken was about 30 ft. deep, and promised to provide enough dirt to make borrow excavation unnecessary.

Simultaneously with the loading operation, an Adams 512 motor patrol grader (diesel) sidesloped the bank to the required slope of 1½ to 1. The grader was alternating between this site and the one closer to the city, and since the distance was so short, was having no difficulty in synchronizing the side-sloping with the digging.

According to Owens' schedule, these scrapers, when done with this particular point, would be available to begin the final grading just within the city limits, an area which was being cleared by early October. Thus, two of the three groups of equipment were being used in a kind of "leap-frog" pattern. The pattern of the job which, roughly, began midway between Greensboro and the county line and was worked simultaneously toward both ends, was originally determined by the amount of clearing required and by the fact that concrete pipe laying was begun at the same time as grading. Areas which needed little or no clearing were started first while Payne and his labor crew worked on other stretches ahead of the equipment.

Scrapers Meet Rougher Going

At the north end of the project, near the county line, and a short distance from Owens' field office at Brown's Summit, the third group of equipment was bridging a shallow valley near Reidsville with a 25-ft. fill. Two LeTourneau 15-yd. scrapers were beginning to

• Left: 16-yd. LeTourneau, drawn by a Caterpillar RD-8 with assistance from an RD-7, loads in a 30-ft. cut for haul to a fill 1600 ft. away.

• Below: One of the 29 units moved for Pullen and Owens by H. A. Beaver, Stateville, was this small residence. Scattered bricks in the foreground show its former site—now the new right of way.

• A 15-yd. LeTourneau scraper, pulled by Caterpillar D-7, loads on the north end of the project with pusher aid from an International TD-18 equipped with Bucyrus-Erie hydraulic bulldozer.

run into a vein of sandstone in the 22.2-ft. cut, and the Gar Wood ripper was loosening it for them.

An International TD-18 with Bucyrus-Erie hydraulic bulldozer was being used as a pusher for these two scrapers. About 250 yds. per hour were being loaded here, the haul was about 550 ft. down a slight grade. An Adams pull-type grader was side-sloping, and an International Farmall tractor with a Ragland sheepsfoot roller tamped the fill.

Probably the toughest digging of the job was being encountered in this section, with boulders impeding the haul, and the sandstone vein handicapping the loading. The ripper, however, was proving to be sufficent at the time to break up the stone, and the "handyman" bulldozer cleared the boulders too large to be loaded.

Outdoor Maintenance

Owens had suffered no major delays because of equipment breakdowns. Because the weather had been generally fair, except for the record rain mentioned earlier, and the job a relatively short one, no large shop had been built for repair work, all of the maintenance work being done outdoors under the direction of C. A. Cook, master mechanic.

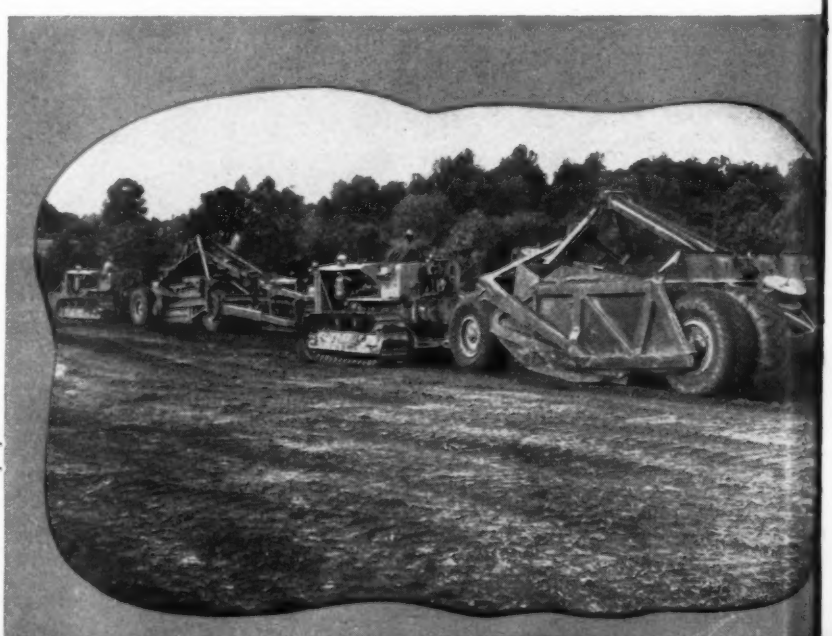
All equipment was lubricated nightly, immediately following the day's work, in order that no operating time need be used during the day for this purpose, and to insure that each piece of equipment would be ready for work in the morning. Gulf Oil products were being used exclusively. Cook's main headache is the current parts shortage, but he has managed to keep the equipment running with make-shift repairs while awaiting the arrival of needed spare parts.

This operation is, to date, the largest undertaken by the Pullen-Owens organization since its founding in 1943. Both Owens and C. B. Pullen, his partner, are veteran road builders, nevertheless, both of them having worked for years in the T. M. Strider firm of Nashville before branching out for themselves. Owens, for the most part, handles the field work for the company, while Pullen takes charge of the home office.

Payne, Cook, and R. C. Byrd, his equipment foreman, form the nucleus of Owens' field organization. These men worked for him when he was with Strider, and joined him when he went into business with Pullen.

Owens is quietly proud of the safety record his men had hung up on the job. In fact, the only casualities to date are: (1) a badly battered water-bucket, left under a sheepsfoot roller by the waterboy; and (2) a frightened hog nearly killed by a falling tree while rooting in a pen near the right of way.

State highway department representatives on the project are T. A. Burton, Division Engineer, and R. L. Hickerson, the resident engineer, who is considered by Owens as "one of the best" he has encountered.



• 16-yd. LeTourneau (left) and 20-yd. Gar Wood, Caterpillar RD-8 and D-8 drawn scrapers beginning a cut just north of the Greensboro city limits. Dirt loaded here is used in fill which covers cattle pass.

Project Equipment

3 Bucyrus-Erie Scrapers, 10-yd. struck drawn by International TD-18's.
2 Gar Wood Scrapers, 20 yds., drawn by Caterpillar D-8's.
3 LeTourneau Scrapers, 16 yds., drawn by Caterpillar D-8's and D-7's.
2 International TD-18's with home-made pusher plates.
1 International TD-18 with Bucyrus-Erie cable operated bulldozer (used as pusher).
1 International TD-18 with Bucyrus-Erie hydraulic bulldozer (pusher and general use).

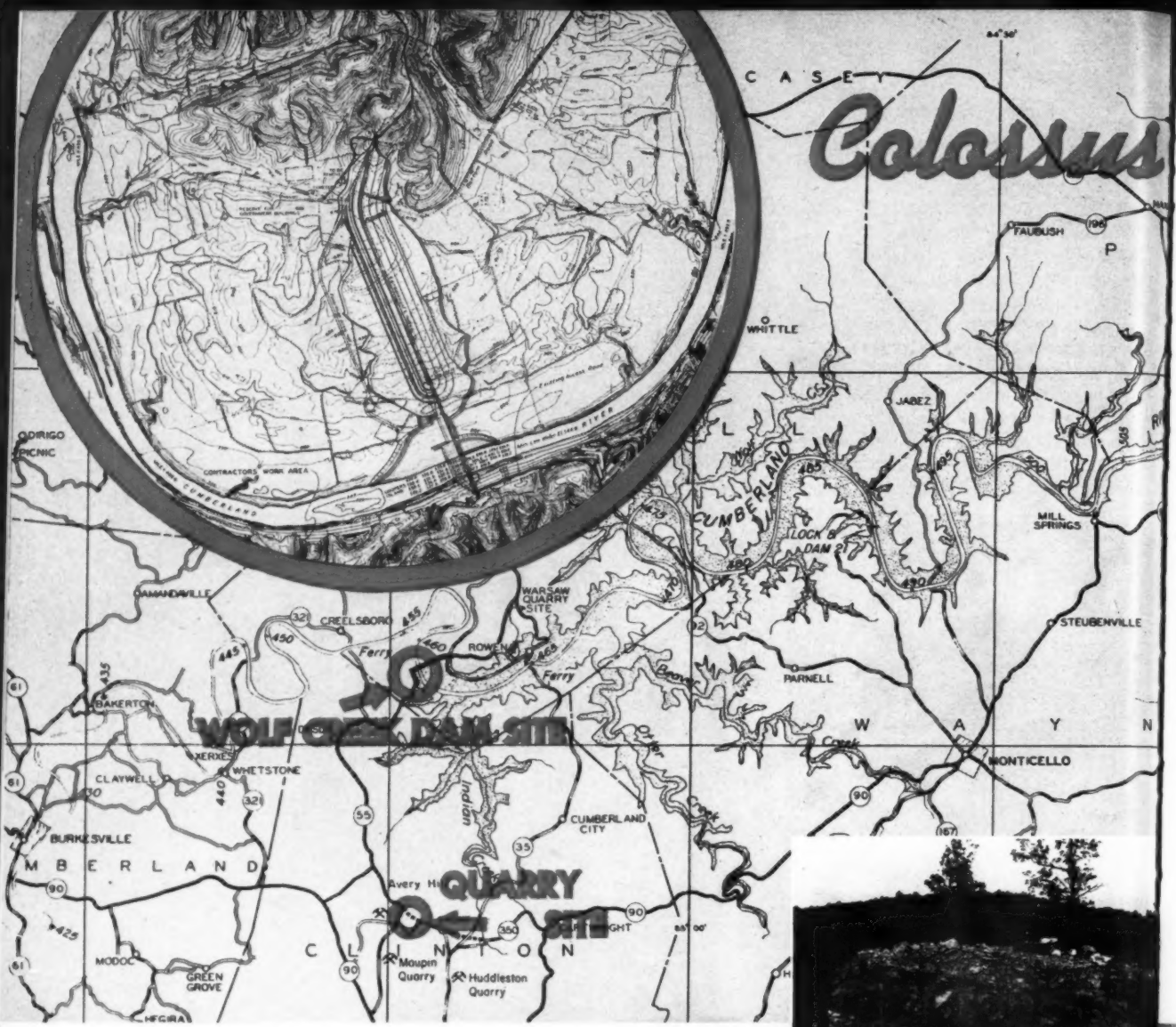
• A Ragland sheepsfoot roller on an International Farmall tractor compacts fill laid down near Reidsville, on the far north end of the project.

1 Caterpillar RD-7 with LeTourneau bulldozer (general use).
1 Caterpillar D-7 with LeTourneau bulldozer (general use).
1 International TD-18 with Bucyrus-Erie cable operated bulldozer and boom attachment.
1 Gar Wood Model 10 ripper.
1 Bucyrus-Erie Model CR-2 ripper.
2 Bucyrus-Erie sheepsfoot rollers drawn by Caterpillar RD-6 and International TD-35.
1 Ragland sheepsfoot roller drawn by International Farmall tractor.
1 Adams diesel motor grader.
1 Adams pull-type grader.
1 Jaeger compressor (105 cu. in.).
1 Disston portable power saw (36 in.).
1 Chevrolet 1½-ton truck used for maintenance and utility.
1 Ford '42 pickup truck for general use, hauling labor, etc.

• This 15-yd. LeTourneau operated with Caterpillar D-7 has just finished loading on the north section. In the background an Adams pull-type grader drawn by Caterpillar D-7 sideslopes.

• Gar Wood 20-yd. scraper and Caterpillar D-8 begin loading alone while pusher usually assisting is helping one of the other scrapers not in the picture area.

• An International TD-35 draws a Bucyrus-Erie sheepsfoot to compact fill on the south section. Lift height on job was 6".



By Albert E. Becker

ONE of the largest projects on the books today for the U. S. Engineers is Wolf Creek Dam across the Cumberland river in Russel County, Kentucky. Constructed of earth and concrete sections, this will be a multi-purpose dam: flood control, electrical power output and recreational areas authorized by the Flood Control Act of 1938. When completed, it will consume over 9,120,000 cu. yds. of rolled earth and 1,290,000 of concrete.

The project is located in a remote region 461 miles upstream from the confluence of the Cumberland and Ohio rivers. It is 50 miles from the nearest railroad, in a vast valley surrounded by rugged terrain covered in large areas by native timber. The floor of the valley—broad, level, and fertile—is patterned in small farms, many of which date back to the pioneers of this region and are still operated by their descendants.

Logical Flood Check

Climate of the region is moderate with abundant rainfall resulting from a union of warm air from the Gulf and a slowly southward moving cold front that parallels the Appalachian mountains. The present damsite was considered by Government Survey Engineers as the most logical point to check the flood crests that drain an area of over 5,810 sq. miles. This is another step in the comprehensive program to harness the entire Ohio-Mississippi watershed.

All factors—the tightness of

...of the Cumberland....

This article describes construction methods used at Wolf Creek Dam by the Jones-Wright Construction Company, U. S. Engineer Corps, and the Cumberland Quarries Incorporated to build the largest multi-purpose dam in America. The structure will extend for one mile across the Cumberland river near Jamestown, in southern Kentucky.

the valley, available borrow areas and good foundation rock conditions—recommended construction of this the principal dam in the Cumberland valley. The geology of the site was determined—from core samples taken by survey engineers—to be an average of 30 ft. of silty, sandy, clay-brown overburden on a solid limestone bedrock.

The 4,000-ft.-long rolled-earth embankment will extend from the sloping hills on the north side of the river to the concrete masonry section. From this point the concrete section extends 1,796 feet to the 400-ft. limestone cliffs of the south bank.

Greatest height of the concrete section will be 240 ft.; its width at the base 172 ft.; and at the top, 32 ft. wide. A 24-ft. highway with 4-ft. sidewalks on both sides will span the top of the entire dam when completed. State-owned access roads to both ends of the dam were finished several years ago.

Healy Original Contractor

S. A. Healy Company, Chicago, and White Plains, New York, were awarded the first contract on October 2, 1941. In spite of the outbreak of war two months later, they accomplished much preliminary ground work: installation of the quarry, aggregate and concrete plants, overhead cableway, shops, offices, and excavation of nearly 1,000,000 cu. yds. of overburden to start the earth embankment section. In August of 1943, their contract was terminated and the project postponed for the duration.

A new contract was awarded on April 6, 1946 to the Jones-Wright Construction Company, Jamestown, Kentucky. This organization is a combination of the J. A. Jones Company, Charlotte, North Carolina, and the Wright Construction Company, Columbus, Georgia. Their contract authorizes the expenditure of $18,600,000.00 to complete the project by December 31, 1949—with a penalty of $500.00 a day. The J. A. Jones Construction Company built one of the large atomic units at Oak Ridge, and other wartime projects.

Excellent Borrow Available

The earth-fill embankment, in area over 2,000 by 4,000 ft., is being developed from two excellent borrow pits within one mile hauling distance on the reservoir side of the project. A third borrow pit is available, if needed, two miles downstream. Altogether these borrow areas hold over 12,000,000 cu. yds. of high quality impervious material.

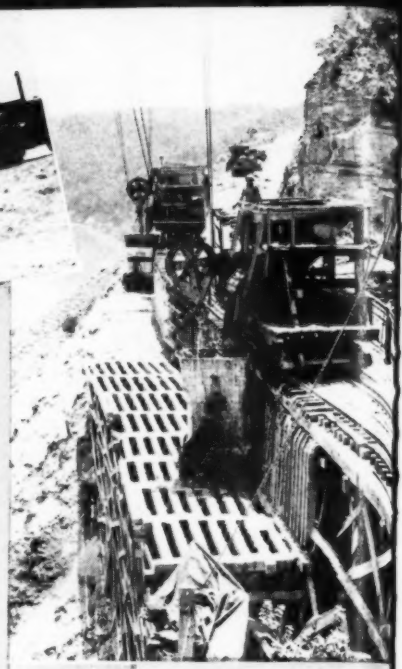
In the borrow pit now under excavation, a Euclid loader, powered by a D-8 Caterpillar tractor, runs continuously. It loads approximately 850 cu. yds. of material per hour into a constantly moving line of 15 bottom-dump

• **Top Left: U. S. Engineer map shows location of the project on the Cumberland River in southern Kentucky. Inset is a portion of the site map.**

• **Left: 14 miles southeast of the damsite, one of the Cumberland Quarries' 2½-yd. Bucyrus-Erie 54-B shovels loads blasted rock to a 9-yd. Euclid truck. Material is crushed to produce the aggregate used in construction of the dam.**

• **Below Left: In one of the borrow pits, a Caterpillar-D-8 drawn Euclid loader fills a 13-yd. Euclid bottom-dump wagon for the haul to the embankment.**

• **Below: Two LeTourneau B-31 Carryalls are among the equipment being used by the contractor to build up the embankment.**



• Project officials checking progress of the embankment fill are, from left: J. J. Fason, Earthfill Supervisor, Jones-Wright Construction Co., J. I. Bowman, Resident Engineer, U. S. Engineers, W. B. Kirk and L. G. Phillips, Superintendent and Assistant Superintendent, respectively, for the joint venture.

•

• Left: In the quarry near Albany, Ky., operated by Cumberland Quarries, Inc., a 1¾-yd. Marion shovel works in the pit while two Keystone 51 churn-type blasthole drills put down 6-in. holes on the ledge 90-ft. above.

•

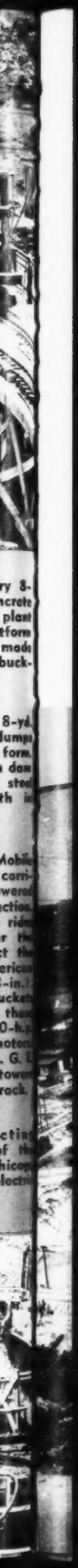
• Below Left: The aggregate plant on the high side of the project supplies material to the batching plant through an underground conveyor (tube in center foreground).

• Above: Cars carry 8-yd. loads of concrete from the batching plant to this loading platform where transfer is made to 8-yd cableway buckets.

• Left: One of the 8-yd. Insley buckets dumps concrete into a form. This is the first high dam to use Blaw-Knox steel forms (on monolith in right background).

• Bottom Left: Mobile head towers with carriages and buckets lowered for the daily inspection. In addition, a man rides each carriage over the cableway to inspect the main cables (American Steel & Wire, 3-in.). Carriages and buckets are operated from these towers with 400-h.p. General Electric motors. Seventy-five-h.p. G. E. motors propel the towers along the radius track.

• Below: Compacting concrete in one of the monoliths with Chicago Pneumatic 519 electric vibrators.



13-yd. Euclid wagons. In addition, three Super "C" Tournapulls and three B-31 LeTourneau Carryalls are averaging better than four round trips for each unit an hour.

Altogether, more than 15,000 cu. yds. of material are excavated from the borrow pit and placed on the fill every 16-hr. working day. Weather conditions so far have been favorable, allowing the earth work to beat the schedule by several weeks. As the material is placed on the fill, it is compacted by six McCoy sheepsfoot rollers drawn by two Caterpillar D-8 dozers, making six passes for every six in. of material laid. Over 3,500,000 cu. yds. of material have been placed on the fill since 1946.

An International-powered Bucyrus-Erie TD-18 cable grader is used on the fill as auxiliary equipment, also assisting in the excavation of the spillway and power house areas. Most of the Euclids are mounted on Goodyear Sure-Grip tires—LeTourneaus on Goodrich heavy-duty treads. When completed, 150,000 cu. yds. of stone will be used to rip-rap the impounded side of the earth embankment. The downstream side will be sodded with a drainage gutter along the base.

Dredge Foundation Areas

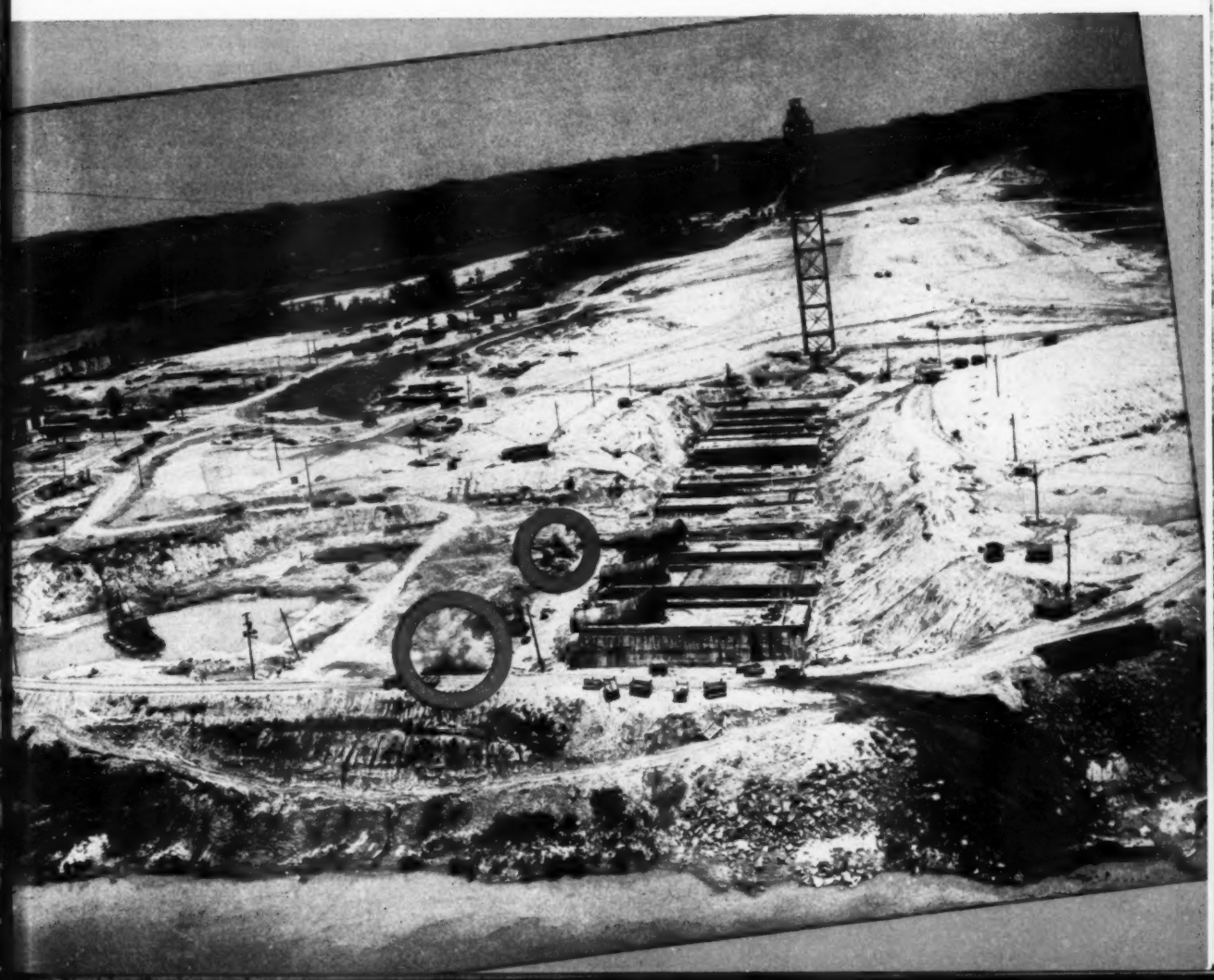
Early excavation of overburden for the sites of the concrete section, power house and spillway channel areas was accomplished by a dredge. Mounting a 15-in. AMSCO suction pump with a cutter head, it started work in the right bank of the river, cutting approximately 20 ft. of silty and sandy overburden from approximately 240,000 sq. ft. for the concrete section. As dredging progressed, removed material was used to build up a 50-ft., cofferdam along the former river bank. After completing this area, the dredge began cutting overburden immediately adjacent for the power house area.

This time the dredge built with its discharge a separation dike between this excavation and the previous one. Next job was cutting the power house discharge channel, leaving another separation dike behind it. When the dam nears completion, the dredge will cut the spillway channel to connect a short distance downstream with the present river course. Approximately nine acres of overburden will have been removed from three areas excavated by the dredge at that time.

Shovels Finish the Job

When the dredge completed the first concrete section and sealed it with a dike, two Jaeger 6-in. and

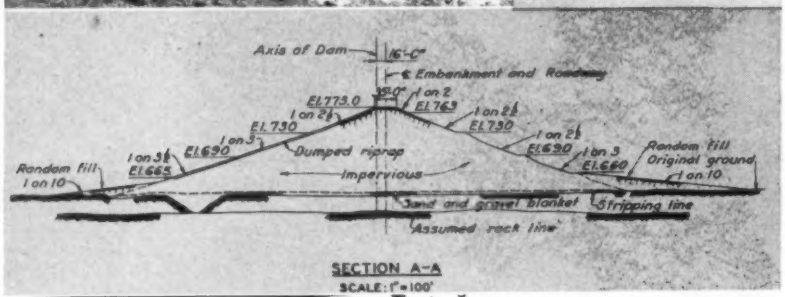
• Six-month old general view of the project from the highside cliff. Contractors' buildings and yards are in the left background, behind the 15-in. dredge. Circled are two noon-hour blasts for the powerhouse excavation. To the right of circles are three of the six penstocks. Bank in foreground is the first cofferdam.



• **Left: Penstock tube section is lowered from the highline while an Insley crane (foreground) raises face forms and a Bucyrus-Erie 2½-yd. shovel removes rock from the powerhouse excavation (left of tube).**

• **Below: Typical section of the Wolf Creek Dam earthfill embankment.**

• **Bottom: At the monoliths, an official conference includes, from left: A. C. Bogaty, Assistant Resident Engineer, H. A. Long, Materials Engineer, J. I. Bowman, Resident Engineer, and R. O. Alexander, Mechanical Inspector —all U. S. Engineers.**



SECTION A-A
SCALE: 1"=100'

four Jaeger 4-in. centrifugal pumps removed the water over the cofferdam into the river. The remaining five to ten ft. of overburden was stripped to bedrock by two 2½-yd. Bucyrus-Erie 54-B shovels. Also used here were a TD-18 International-powered Bucyrus-Erie cable Bullgrader and a Bucyrus-Erie 44-B crane swinging a 2-yd. clamshell bucket. The material was loaded into 9-yd. rear dump Euclids and hauled to a refuse area—two miles downstream from the project.

Early last winter, foundation excavation for the monoliths (units of the concrete section) was executed with the same equipment. This cut was nearly 180 ft. wide, extending from the cofferdam 1,000 feet, and rising in 25-ft. lifts to 275 and 350 ft. to conform with the contour of the bedrock surface and the terrain.

Drilling the rock, six Chicago Pneumatic G-200R and six Ingersoll-Rand FM-2 wagon drills—powered by two Ingersoll-Rand 500-cfm compressors—and 50 Ingersoll-Rand JB-4 and Cleveland H-10 jackhammers, completed the rock excavation by early spring—less than six months elapsed time. The wagon drills, averaging three feet every 30 minutes, drilled 2½-in. holes 12 ft. apart. DuPont Nitronon powder, calculated at a one-half stick per cu. yd. of rock, was used for all blasts—set off between shifts after loud amplified warning signals had warned all workers in the surrounding area.

Three Level Operation

Broken rock from each level was loaded into 15 rear dump 9-yd. Euclids. On the first level, a 54-B Bucyrus-Erie 2½-yd. shovel was used. The second elevation required the use of another 54-B shovel and an Insley ⅜-yd. clamshell for localized work. Here some honeycombing in the bedrock was uncovered, making necessary deeper footing which was dug with little loss of time. Later the Insley was used primarily for crane work in lifting and placing steel forms for the concrete.

On the upper level, a Bucyrus-Erie 44-B crane using a 2-yd. clamshell worked from the bank to place rock across the end of the foundation opening—to prevent

drainage from the slightly higher embankment fill. In order to keep the pit dry during the winter's frequent snowfalls and thaws, the contractor installed several 3 and 4-in. Rex centrifugal pumps for these sump conditions. Part of the rocky overburden material from all three levels was piled on both sides of the excavation to be used later for fill-in around the concrete after removal of the forms.

Powerhouse Not in Contract

At present the foundation for the power house and its discharge channel is being completed with the same drilling equipment used for the monolith foundations. As the rock is blasted, it is loaded into Euclid rear dumps by the 44-B Bucyrus-Erie 2-yd. clamshell and a 22-B Bucyrus-Erie transit crane with 1-yd. clamshell bucket. Construction of the actual power house is not included in the present work—it will be built on a final separate contract.

Before S. A. Healy's contract expired, the overhead cableway was installed to permit the transporting of concrete and materials across the river from the batching plant. This method was deemed more economical than a transportation bridge. The cableway consists of two steel head towers that move along a 2,800-ft. radius track on top of the left-bank 400-ft. cliff, referred to on the job as the "high side." On the right side of the river beyond the last concrete monolith form is the 375-ft. tail tower.

Each head tower is connected to the tail tower by two 3-in. American Steel and Wire lockcoil cables. Each cable has a carriage controlled from its respective head tower by a 1-in. AS&W lockcoil load line, an endless line, and a 7/8-in. slack line. Carriages and head towers are powered by 400-h.p. General Electric motors.

The distance between the head towers and the tail tower is 2,300 ft. The cables average 375 ft. above the ground. Phone talkers are stationed at all points where the overhead cableway operates to direct the positioning and movement of loads.

Considerable progress has been

(Continued on page 40)

W. H. Nichol

With the death of William Henry Nichol on December 3, 1947, open pit coal mining lost one of the pioneers of that industry as we know it today. Always a keen student of mining problems, he was one of the first to stress the role of big output in stripping and to use liquid oxygen for open pit mine blasting. Continually striving for, and achieving, satisfactory cost records, he knew well the close relationship between output and economy. Throughout his career he was strong in promoting safety.

The history of open pit coal mining shows many men with foresight backed by the courage of their convictions, and Bill Nichol stands with the best of these giants.

Born June 12, 1877, at Appelby, West Moreland County, England, W. H. Nichol was the son of Jane Atkinson and Thomas Nichol. He came to Niagara Falls, Ontario, at the age of five years. At the age of seventeen he moved to the states, working at Rome City, Indiana, on a steam shovel. In 1898 he went to Vincennes, Indiana, with Fitch & Waddle, working on the B. & O. Railroad. In 1900 he went to New Brunswick, New Jersey, working on a construction project, and soon afterwards to Reading & Confluence, Pennsylvania, working on the railroad as a shovel operator for Eyer & Shoemaker.

On December 2, 1902, he was married to Rachel Weaver of Wheatland, Indiana, and continued working for Eyer & Shoemaker until 1904 when he moved to Newton Falls, Ohio, where he worked with the same company. Later, about 1913, he moved to Union Dale, Indiana, working for the same concern on another railroad project. In 1914 he operated a steam shovel on the hydroelectric project along the Soulange Canal near Montreal. The same year he was operating a shovel in Halifax, helping to construct the new ocean terminals. In 1915 he returned to the United States and was employed for a short time at Pittsburgh, Pennsylvania, and later at Hopedale, Ohio, where he served as shovel operator, master mechanic, and later superintendent, for the Harmon Creek Coal Company. He worked for this company five years and then came to Oakland City, Indiana, about 1921, for employment with The Enos Coal Mining Company in the capacity of superintendent. Later he became general superintendent, and in 1940 became Vice President in Charge of Operations, which position he held at the time of his death.

Two children were born to him and Mrs. Nichol: one daughter, Anna, who died in infancy, and a son, Col. William W. Nichol of the United States Army, now stationed at Walter Reed Hospital, Washington, D. C.

He was a member of the Presbyterian Church, Oakland City, Indiana, Masonic Lodge, and was a 32nd degree Mason.

Survivors, besides the widow and son are two sisters, Mrs. Mary Rose, of Buffalo, New York, and Mrs. Neil Williams, of Thorld, Ontario; one brother, George Nichol, also of Thorld; daughter-in-law, Mrs. William W. Nichol; and granddaughter, Nancy Ann, both of Washington, D. C.

Equipment

you ought to KNOW ABOUT

Tilt Type Trailers

Manufacturer: C. R. Jahn Company, Chicago, Illinois.

Claims: Two new tilt type trailers for transporting tractors, rollers, compressors, shovel-loaders, mixers, etc., have just been announced. The larger of the two Tilt Trailers, known as the Model JT-408, has a capacity of eight tons. The entire load is carried on a tandem axle with four wheels and tires. The smaller model, JT-205, has a single axle and capacity of five tons.

Both models are balanced so that one man can raise or lower the platform. No jacks or loading ramps are required. The entire load can be carried on the trailer but the platform is so designed that the load may be shifted to transfer any desired weight to rear of the truck when greater traction is required. Positive automatic safety lock holds platform in position when loaded or empty. Rubber-mounted drawbar absorbs road shocks to protect both truck and trailer.

Welders' Carrying Case

Manufacturer: Air Reduction Sales Company, New York 17, New York.

Claims: This new carrying case for transporting a welding or cutting outfit right to the job is now in production. Torch, tips, regulators, hose, gloves, goggles, wrenches, and miscellaneous equipment can be compactly arranged in the case, the manufacturer says.

Construction is of 22 gauge cold rolled steel with flush double lock seams. Reinforced ends and cover are especially paneled for rigidity and strength. Other features of the new carrying case are a ripple exterior finish of baked enamel; handle-equipped lift-off tray; extra-heavy duty bolt catches; and a padlock hasp.

"LaPlant-Choate" Hydraulics

Manufacturer: LaPlant-Choate Manufacturing Company, Incorporated, Cedar Rapids, Iowa.

Claims: A complete new line of

hydraulic products—including hydraulic pumps, motors, valves, cylinders, and a compact 3-in-1 power unit—is now being offered.

Pumps, motors, and power units are available in four sizes—15, 25, 40, and 60 GPM. Cylinders are available in three sizes— 4", 5", and 6" diameters. Valves come in two sizes—for control of flows up to 50 GPM and 70 GPM.

The pumps and motors include such design features as interchangeable spur-type gears, needle roller bearings, positive lubrication, and bronze reversible thrust plates. The power unit incorporates new principles like surge control, a super-charged pump and small capacity reservoir.

This new hydraulic line is for use on any type of machinery. Applications thus far include dump trucks, snow plows, wagons, excavators, power saws, conveyors, hoists, and all types of road machinery.

"Caterpillar" Tractor Cab

Manufacturer: Caterpillar Tractor Company, Peoria 8, Illinois.

Claims: A new, all steel welded cab has been especially designed for attachment on the 115 h.p. "Caterpillar" Diesel DW10 wheel type tractor.

Offering year-around utility of the tractor and eliminating the threat of job interruptions due to inclement weather, the cab is reported to provide increased comfort for operators and complete protection from the elements.

"Osgood" Excavator

Manufacturer: The Osgood Company, Marion, Ohio.

Claims: The new 3/8-cubic yard "Osgood" Type 5, Model 50 excavator is now available.

The Type 5 is said to be a speedy light-weight machine, designed for excavating and material-handling jobs that are not profitable for the larger size excavators. It is available as a shovel, dragline, clamshell, crane, and hoe, and can be changed from one class of service to another.

All main operating machinery is positioned on a welded deck, proportioned to take strains and

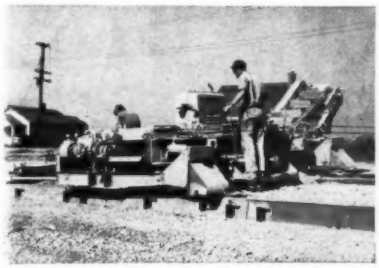
stresses set up in operation. The machine may be powered with either gasoline or diesel engine. Twin Disc clutches activate the swing, travel, and hoisting motions. Operating controls are grouped around, and in front of, the operator.

Vibratory Subgrader

Manufacturer: Blaw-Knox Company, Pittsburgh, Pennsylvania.

Claims: In this new subgrader, the principle of vibration has

been applied to the work of excavating subgrades for paving construction. The application of vibration is a method of replacing brute effort with a repetitive force and is said to achieve greater efficiency in cutting through the earth or shaving the subgrade material to a given grade and crown.



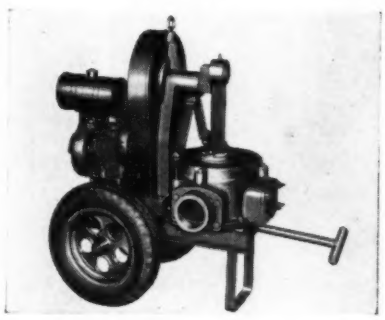
As a result of this use of vibration, the new subgrader—known as the Blaw-Knox Precision Subgrader—is reported to reduce power consumption and lower the cost per square yard of preparing the subgrade. Field tests have revealed that the vibrating cutting edge will penetrate through the hardest material without transmitting shock or movement into the road forms.

To give final shape to the subgrade, the machine has a two-wheel strike-off, which is adjustable for crown and width and is equipped with a control lever for raising or lowering the blades. This strike-off is towed behind the subgrader at a distance of six feet. The distance exposes the excavated subgrade and provides space to complete minor corrections, such as the removal of undesirable rocks or the addition of material.

Diaphragm Pump

Manufacturer: The Carver Pump Company, Muscatine, Iowa.

Claims: This newly developed diaphragm pump is being manufactured in 3" and 4" sizes with capacity from 1,000 to 6,000 G.P.H. It is designed for the pumping of sludge, mud, seepage, grit, sewage, slime, and other fluids with a solid content up to 25%.



Designed for long life and hard use, the pump has only one moving part exposed to gritty water. This is its live rubber diaphragm which can be easily replaced.

Conveyor Idlers

Manufacturer: Goodyear Tire & Rubber Company, Akron, Ohio.

Claims: New type impact-cushioning idlers for belt conveyors are now available. Non-pneumatic, these idlers consist of rubber rings mounted on idler cores instead of the conventional rubber-covered steel idlers.

According to the manufacturer, high resiliency of the rubber rings solves the impact problem by decelerating the lump. As a result, it is said that the life of even top quality belts is increased materially, doubled in some instances.

Acetylene Generators

Manufacturer: Sight Feed Generator Company, Richmond, Indiana.

Claims: Completely redesigned, these new 14ND Carbide Acetylene Generators feature lighter weight greater portability, and maximum safety.

The "Sight Feed" visible supply hopper has been reduced in weight by the use of steel stampings. This is said to bring easier and faster recharging. New pneumatic rubber tire trucks give the generator greater portability.

"Coffing" Hoist Unit

Manufacturer: The Coffing Hoist Company, Danville, Illinois.

Claims: A new Hoist-Jack a combination hoist and jack designed to move or lift heavy loads

in shops, mines, and on construction jobs—has just been introduced. Complete in three pieces (stand, hoist, and handle), this Hoist-Jack has a rated capacity of 2,000 pounds, weighs 23 lbs. complete.

It features a hoist of ratchet-and-pawl construction and a "safety-load" handle designed to bend at maximum overload before there is any possibility of the chain breaking or of the hooks straightening out.

Hard-Facing Rod

Manufacturer: Wall Colmonoy Corporation, Detroit, Michigan.

Claims: The new Colmonoy plastic bonded rod is now available in five pound coils. This rod, which is supplied in $\frac{1}{8}$-inch and $\frac{3}{16}$-inch diameters, makes it possible to execute the Colmonoy Sprayweld Process using wire metallizing equipment.

The rod is used in the following manner: It is passed through the flames of the metallizing gun; the plastic burns out, leaving Colmonoy particles to deposit on the surface being sprayed. After the desired amount of overlay has been applied, it is bonded to the base metal by means of induction equipment, a controlled atmosphere furnace, or a large Oxygen Acetylene torch. The final result is a molecular bond between the Colmonoy and the base metal.

Cut Your Costs, too

Above: An International TD-9 Diesel Crawler with Dozer-Shovel is loading gravel on a wagon drawn by a modified International ID-9 Diesel Wheel Tractor.

On opposite page: An International TD-9 with Bulldozer-Shovel is shown loading rock on a truck in a quarry that supplies a crushing plant.

CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

INTERNATIONAL

. . with INTERNATIONAL DIESELS

You'll find International Diesel Crawlers hard to beat for excavating, loading and general utility work. When equipped with tractor shovels that are also 'dozers, International Diesels work and save in many ways. They can cut your costs to rock bottom with their low-cost operation and top-notch efficiency.

Use these units to dig basements and other excavations, to dig out and load sand and gravel—or snow—on trucks or wagons. Use them also as bulldozers in backfilling and many other jobs.

When crawlers offer the versatility, operating economy and dependability of International Diesels, it is good business to standardize on them. Ask your International Industrial Power Distributor to assist you in selecting the tractors and equipment you need.

Industrial Power Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue • Chicago 1, Illinois

Field NOTES

Wheel Bearing Lubrication

Wheel bearings can only give satisfactory service when properly lubricated and adjusted. The following instructions cover the best application of grease to wheel bearings and hubs:

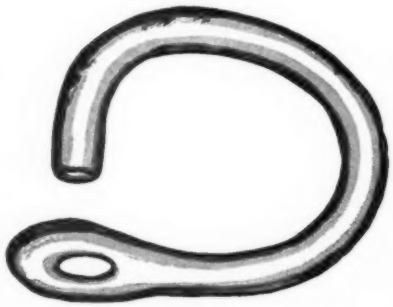
1. The grease should be thoroughly worked into the bearings so that crevices around the balls or rollers are completely filled. The use of a mechanical grease packer is desirable, although bearings may be packed by hand if time and care are taken. Dirt or grit should *never* be permitted to enter the bearing. Grease containers should be kept covered to prevent accumulation of dirt on the surface of the grease. Mechanical packers should be wiped clean before use to avoid forcing dirt into the bearing.

2. Apply a layer of grease approximately ⅛" to ¼" thick on the hub and axle surfaces so that they are completely covered and so that a dam is formed to hold the lubricant on the bearings.

3. Do not fill wheel hubs completely full of grease. While some grease may be placed in the hubs, overfilling may cause leakage of grease through the seals onto brake bands because of pressure from expansion when the hubs heat up during operation.

Courtesy The Gulf Oil Corporation

Chain Repair Link



When a chain breaks, an outfit is laid up, and valuable time is lost while repairs are being made.

Savings in both time and money are made possible by keeping a repair link, like the one pictured, in the tool box. Any blacksmith or handy man can make such a link. To repair the chain, just place the broken ends in the link, hammer the point of the link into the eye, and rivet over. The chain is then as strong and flexible as ever.

Vollie Tripp

"Could I express an opinion—provided the opinion were not my own?"

Fire Prevention Rules For Welders

One of the first rules of fire prevention in welding is making sure that your blowpipes, regulators, and hose are in good repair, and all connections are tight. Keep flame, sparks, hot slag, and hot metal away from anything that might catch fire.

Never cut or weld where sparks or an open flame would be a hazard. Any room that contains flammable gas, vapors, liquids, or any material that easily catches fire, is a hazardous location. Even cutting or working near such rooms is not safe unless there is absolutely no chance for sparks to pass through cracks or openings in walls, floors, windows, or doors.

If you can move the work, take it to a place where you can't possibly set a fire. You have to do this if the part is located where open flames are prohibited. It's sensible practice on any job.

If you can't move the work, move all materials that burn easily a safe distance away from it. For cutting this distance should be 30 feet or more.

Sweep floors clean before you light the blowpipe. If they're wooden, wet them down. Then set pans of water or sand where they will catch dripping slag or pieces of hot metal that might fall.

Protect wooden beams, partitions, flooring, or scaffolding from the blowpipe flame by sheet metal or asbestos guards. Place similar guards where they will stop sparks from spreading.

Be prepared to put out any fire promptly with fire extinguishers, water, or sand. Make every effort to prevent fires, but be prepared to put them out if they start in spite of precautions. In hazardous locations, have someone on hand to watch for and be ready to put out a fire.

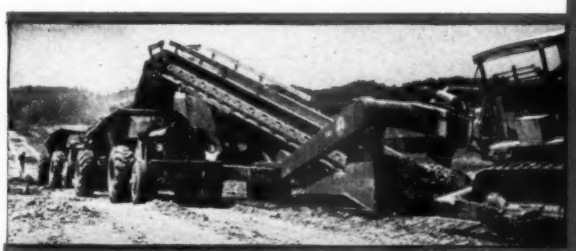
If there is any chance that a smoldering fire may have been started, keep a man at the scene of the work for at least half an hour after the job is through. Have him look carefully for smoke or fire before leaving. This is especially important where cutting has been done in wooden structures or near slow-burning materials. Sparks from heavy cutting sometimes fly 30 feet or more and hold their heat for several seconds after landing.

Courtesy "Linde Tips," Linde Air Products Company

EUCLID LOADER MAKES THE DIRT FLY!

BIG YARDAGES AT LOW COST

Three hydraulic control levers within convenient reach of operator provide coordinated control of crawler tractor and Loader.



Built to match the speed and efficiency of other Euclid earth moving equipment, the Euclid Loader provides fast, mobile loading of large capacity hauling units. It loads practically any material — from loose sand to hard clay and shale — in a short travel distance.

The Euclid Loader has set new records for earth moving on many types of jobs. It has cut costs and increased production on such work as dams, levees, airports, highway and railroad construction, industrial plant grading, and overburden removal in strip mining.

The wide cutting blade and mold board plow send a steady flow of material to the 54″ belt driven by a diesel engine mounted at the rear of the Loader. Maximum cutting depth is 24″ — grading cuts can be made up to 9′ 6″ in width. Three control levers within easy reach of tractor operator start and stop the belt and adjust the cutting edge for angle and depth of cut. Heavy duty design and construction assure long life and big yardages at low cost.

Ask your Euclid distributor or representative for information on the complete line of Euclid earth moving equipment.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio

EUCLIDS *Move the Earth*

Shots from the FIRING LINE

Estimate 20% Increase in New Construction in 1948

New construction in 1948 probably will reach $15.2 billion according to John L. Haynes, Chief, Construction Division, Department of Commerce. This figure, a joint estimate of the Department of Commerce and the Department of Labor, represents a 20 percent gain over the $12,665 million expected in 1947.

About three-fourths of the 1948 total, or $11,375 million, will be privately financed, the remaining $3,825 million will be publicly financed, according to the Government estimate. Private residential building (excluding farm) will again be the largest single component, Mr. Haynes stated. It will be valued at $6 billion, an increase of 25 percent over the $48 billion total expected in 1947.

Expenditures for private nonresidential building will rise slightly to $3.250 million as compared with $3,165 million in 1947. The probable increases in commercial building and in miscellaneous nonresidential building (churches, theaters, hospitals, etc.) will be largely offset by a sizable decrease in industrial building.

The greatest boost to privately financed nonresidential construction will come from the increased expenditures for public utility enterprises. These will probably total $1,625 million, as compared with $1,315 million in 1947. The various public utilities, especially telephone, light and power, and gas, are striving to overcome the backlog of need created during the period of war restrictions and to expand commensurately with the large postwar demand arising from the high levels of industrial operation and of home building.

Most of the 1948 increase in publicly financed construction will stem from advances in nonresidential building, in highway construction, in sewer and water construction, and in conservation and development. Nonresidential building, reflecting large public hospital and educational programs, will probably reach $850 million as compared with $500 million in 1947. Highway construction is expected to advance 26 percent to $1.5 billion in 1948. Sewer and water construction is expected to total $375 million, and conservation and development $475 million, each registering a substantial gain over 1947.

1947 Topped 1946

Construction activity during the first nine months of 1947 exceeded annual 1946 totals in 17 states, and indications are that this year's nation-wide building accomplishments will be greater than those of the previous 12 months in nearly all parts of the country, according to the November Industry Report on Construction and Construction Materials, released by the Department of Commerce.

Dollar value of new construction put in place in the United States during the third quarter of 1947 amounted to $3,662 million, as against $2,901 million in the second quarter, a net increase of 26 per cent. All states showed substantial increases, both in total new construction and in private construction. Public construction declined slightly in Michigan, Florida, Alabama, Oklahoma and Montana.

Six States—California, Iowa, New York, Ohio, Pennsylvania and Texas—shared third-quarter honors for the greatest volumes of construction in the several categories reported separately.

Three States accounted for more than 28 per cent of the total new construction activity in the first 9 months of 1947. California led with $1,250.1 million or approximately 14 percent; Texas with $655.5 million and New York with $629.1 million made up the other 14 percent.

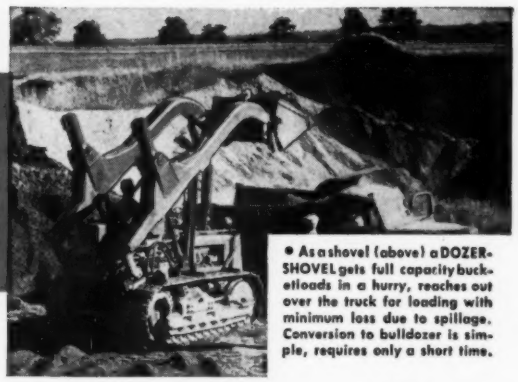
• Idaho's fertile Emmett Valley, a periodic sufferer from insufficient moisture, will soon be assured of an ample supply of water for irrigation from Cascade Dam—now nearing completion. In the photo, a plume of smoke rises over the completed 85-ft.-high by 550-ft.-wide and 700-ft.-long earthfill embankment. The smoke is from the boiler of a donkey engine, used by contractor Morrison-Knudsen to preheat water for concrete being installed in the spillway (left). Initial irrigation from the 21-mile-long reservoir is scheduled for next spring.

Need New S. D. Road Funds

By 1949 most all highway income being received by the South Dakota highway commission will be required for maintenance unless a new source of income is provided, according to the State Highway Commissioner H. B. Test.

Pointing out that most of the funds

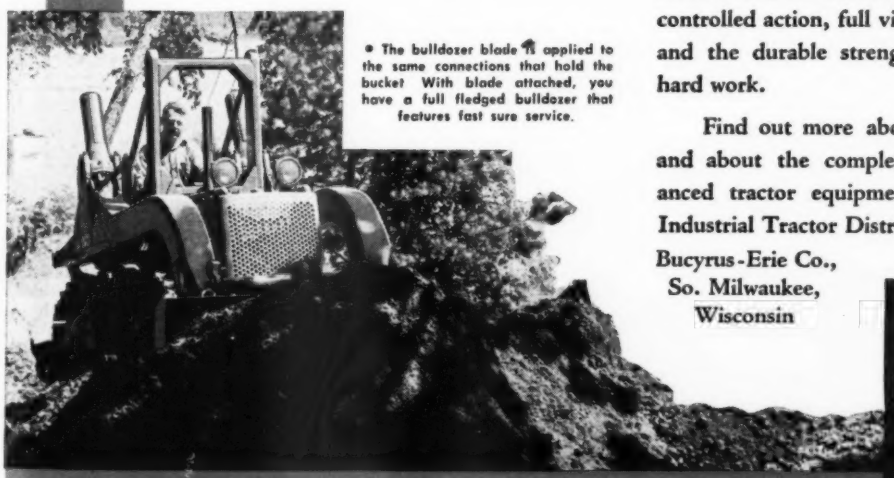
• Extremely rocky terrain and heavy rains helped make a tough job out of Lambert Construction Company's relocation of U. S. 4 northeast of Rutland, Vermont. In the photo, a 1¾-yd. Lorain 80 shovel loads to Athey PD-10 wagons pulled by Caterpillar DW-10 tractors. The 14-yd. (heaped) wagons were making three trips per hour on a 1.4 mile round trip haul.



• As a shovel (above) a DOZER-SHOVEL gets full capacity bucket-loads in a hurry, reaches out over the truck for loading with minimum loss due to spillage. Conversion to bulldozer is simple, requires only a short time.

DOZER-SHOVEL 'QUICK-CHANGE' Means Faster Handling of More Jobs

• Whether the shovel bucket or the bulldozer blade is attached, the DOZER-SHOVEL is always available for handy lift-about crane service. A hook provides the means for attaching the chain sling.



• The bulldozer blade is applied to the same connections that hold the bucket. With blade attached, you have a full fledged bulldozer that features fast sure service.

You no longer need three machines for digging, bulldozing, and lift-about crane work — the Bucyrus-Erie DOZER-SHOVEL handles all three with efficiency that will amaze you. Nor does it take hours to convert. The DOZER-SHOVEL'S "quick-change" feature permits switching from shovel bucket to bulldozer blade (or vice versa) in a few minutes — and both attachments are hook-equipped for immediate lifting service, using a chain sling.

DOZER-SHOVEL owners everywhere are finding that this "three way" service means faster, more economical handling of more jobs because it permits greater equipment spread, at the same time reducing operating costs. When one machine takes the place of three, *two* are freed for other service! Owners are finding, too, that with either shovel bucket or bulldozer blade, the DOZER-SHOVEL has fast smoothly-controlled action, full visibility, easy maneuverability, and the durable strength to stand a steady diet of hard work.

Find out more about the DOZER-SHOVEL, and about the complete Bucyrus-Erie line of balanced tractor equipment, from your International Industrial Tractor Distributor. 68T47C

Bucyrus-Erie Co.,
So. Milwaukee,
Wisconsin

See Your INTERNATIONAL Industrial Tractor Distributor

For BUCYRUS ERIE *Balanced* Tractor Equipment

built up during the war would be matched for spending in 1948, Test said that South Dakota, like many other states, was confronted with the problem of obtaining additional revenues for future construction needs.

Conn. Highway Program

A 1948 program for Connecticut highway improvement projects costing $17,295,550 has been announced by Connecticut Highway Commissioner G. Albert Hill.

Included in the program are projects which will bring the parkway route from New York to the Massachusetts border several steps nearer completion and will improve many trunk roads and federal-aid highways throughout the state.

Of the total program, $13,368,500 will be spent on projects for which federal aid will be received.

"Soothing" Detour Sign

Detours and construction jobs have been put to the novel task of advertising Oklahoma's highway program, according to State Highway director H. E. Bailey. Warning signs posted at such locations have been revamped with the addition of a panel board inscribed with the wording "Sign of Progress."

"Believe it or not," Director Bailey says, "we now receive many letters from motorists who say that they used to cuss when a sign directed them to a detour or sent them over a rough shoefly.

"They tell us now that the addition to the sign has become really soothing and that they endure the inconvenience and roughness of a detour in a pleasant frame of mind after realizing that we are bettering travel conditions."

• New "soothing" detour sign used by the Oklahoma highway department.

Spend $13 Million in Nine Months on Oklahoma Roads

The Oklahoma state highway commission has completed $13,468,311 road and bridge building since it assumed office early last March by appointment from Gov. Roy J. Turner, according to an announcement by State Highway Director H. E. Bailey. This sum is exclusive of construction and maintenance work performed by the state highway department's own forces, at an expenditure of well over four and a half million dollars.

Projects completed during October amounted to $2,704,478, the director said. This is the third time during the eight months the commission has functioned, that completions exceeded the two and a half million dollar mark.

The commission awarded $1,073,531 in contracts during October and issued work orders placing $1,763,718 work in actual construction. According to the state director, the commission had $11,512,571 construction jobs underway at the close of October.

New Standard Dredging Jobs

Dredging contracts totaling $642,277 have been awarded to the Standard Dredging Corporation of New York City by United States Engineers or private concerns adjacent to government dredging projects, according to Claude Cummings, president of the corporation.

Included is a $361,770.20 government project to dredge a turning basin in Port Everglades Harbor, Fla., a $46,800 additional project for the port authority there, and a $94,079.70 government project for dredging in the turning

..Bucket selection made EASY!

Just check your:

Crane Capacity ✓
Work to be done ✓
Clearances ✓

—and select EXACTLY the BUCKET you need from Catalog No. 2076

yours for the asking

You can't go wrong! Exactly the bucket you need is shown in picture and with complete data — in Blaw-Knox Catalog No. 2076.

Here you have the most convenient clamshell bucket catalog ever published — now it is easy to select a bucket for any kind of rehandling, digging or dredging.

Hundreds of buckets to pick from — your job, your equipment, and your conditions can be exactly met — and you will get a bucket which really performs.

Get Catalog No. 2076 — for your library or files — its yours for the asking.

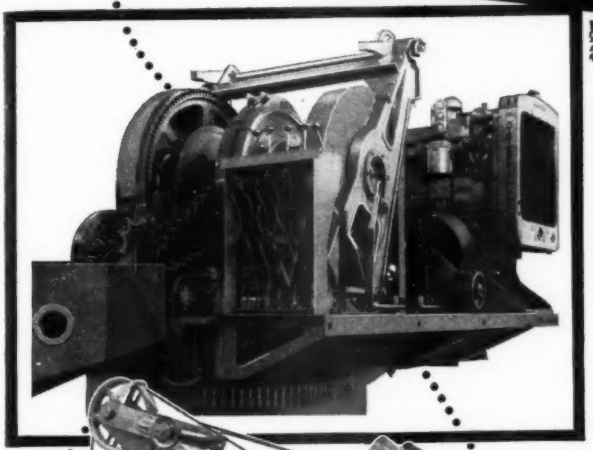
BLAW-KNOX DIVISION of Blaw-Knox Co.
2074 Farmers Bank Bldg. Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington

BLAW-KNOX BUCKETS

UNIT Cast Steel CONSTRUCTION

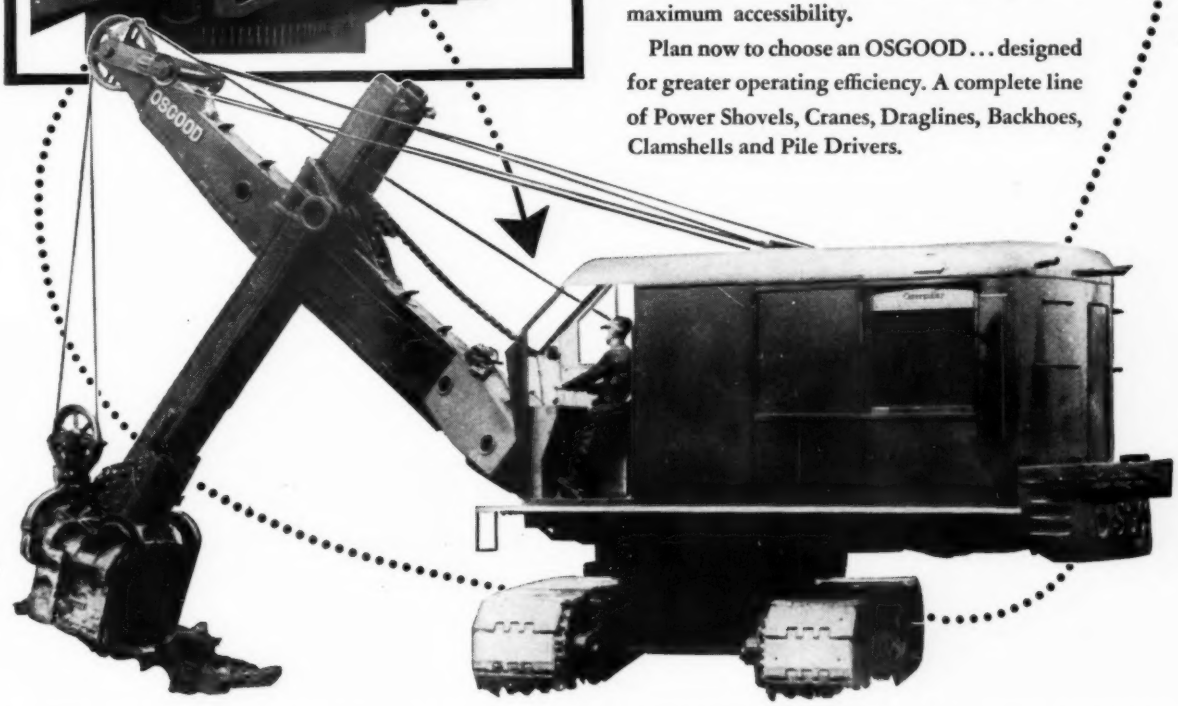
FOR MAXIMUM STRENGTH • PERMANENT SHAFT ALIGNMENT • MORE EFFICIENT ARRANGEMENT OF MACHINERY

ON AN OSGOOD



The deck of an OSGOOD is a single, full length steel casting, acting also as support for the engine and counterweight. Unit cast steel construction assures a strong, solid base, free from vibration, that keeps shafts and other operating parts in perfect alignment. All operating machinery is mounted on this deck to provide maximum accessibility.

Plan now to choose an OSGOOD... designed for greater operating efficiency. A complete line of Power Shovels, Cranes, Draglines, Backhoes, Clamshells and Pile Drivers.



POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

• **International-drawn GarWood 8-yd. scraper cuts down hill on south end of new Tacoma, Wash., community center development.**

basin and channel of Galveston Bay to Texas City, Texas. The latter project will enlarge the usefulness of this part of our inland waterway system.

Other contracts are from government engineers for a $94,626.84 dredging project in the Raritan River, N. J., and a $45,000 project for dredging an adjacent channel.

Kentucky's '47 Program Ranked Fourth in Nation

Kentucky contracted for 1,981 miles of road construction and improvement from January to October in 1947 to rank fourth in the nation in the number of miles under contract, a Public Roads Administration report shows. The contracts totaled approximately $20,655,000, putting Kentucky in eleventh place with regard to value of contracts let. PRA said Kentucky was outranked in mileage by Texas with 4,290 miles, Virginia with 3,096 miles and Ohio with 2,673 miles. Contracts let for the same period in Ohio totaled $22,654,000; North Carolina, $21,601,000; Indiana, $12,115,000; West Virginia, $13,430,000, and Tennessee, $21,244,000, the report showed.

State Highway Commissioner J. Stephen Watkins said that contracts let in Kentucky during November totaled $544,345.12 bringing the state's 1947 total to date to $22,034,996.61. Last month's contracts covered 16.541 miles of road work.

Rural Highway Director George H. Hailey reported that 450 miles of rural highway bituminous surfacing was contracted for during the fiscal year 1946-47 and that all the work has been completed.

Level 30 Acres for Tacoma Housing Project

By A. R. MacPherson

One of Tacoma, Washington's last acreage tracts within the city is being converted into a community and shopping center for south end residents. Located in the heart of the city limits, the enterprise calls for the excavating and leveling of 30 hilly and brush-covered acres, involving the moving of 300,000 cu. yds. of earth over a working period of 6 months. No trucking of dirt is required since the high areas are cut down with scrapers to fill in the low sections. When completed, the area will be divided into 50 x 150-ft. lots for housing, with a 50-ft. parking strip running the entire length of the adjoining boulevard.

Engineering work on the job is being done by MacDonald Engineering Co. of Tacoma. The excavation work is being handled with machines owned and operated by Tacoma Tractor & Equipment Co. under the direction of A. F. Gratzer and Glen Ash. Job equipment includes an International TD-18 diesel

You Can't Beat Welded Construction

WELLMAN

Williams Type BUCKETS

• Wellman pioneered **welded rolled steel construction** for longer life and greater service. It's the extra strength that gives the extra, low-cost digging power. Whatever your requirements . . . whether for Multiple Rope, Power Arm, Dragline, Power Wheel or Special Service—specify Wellman!

⅜ to 16½ yd. capacity.

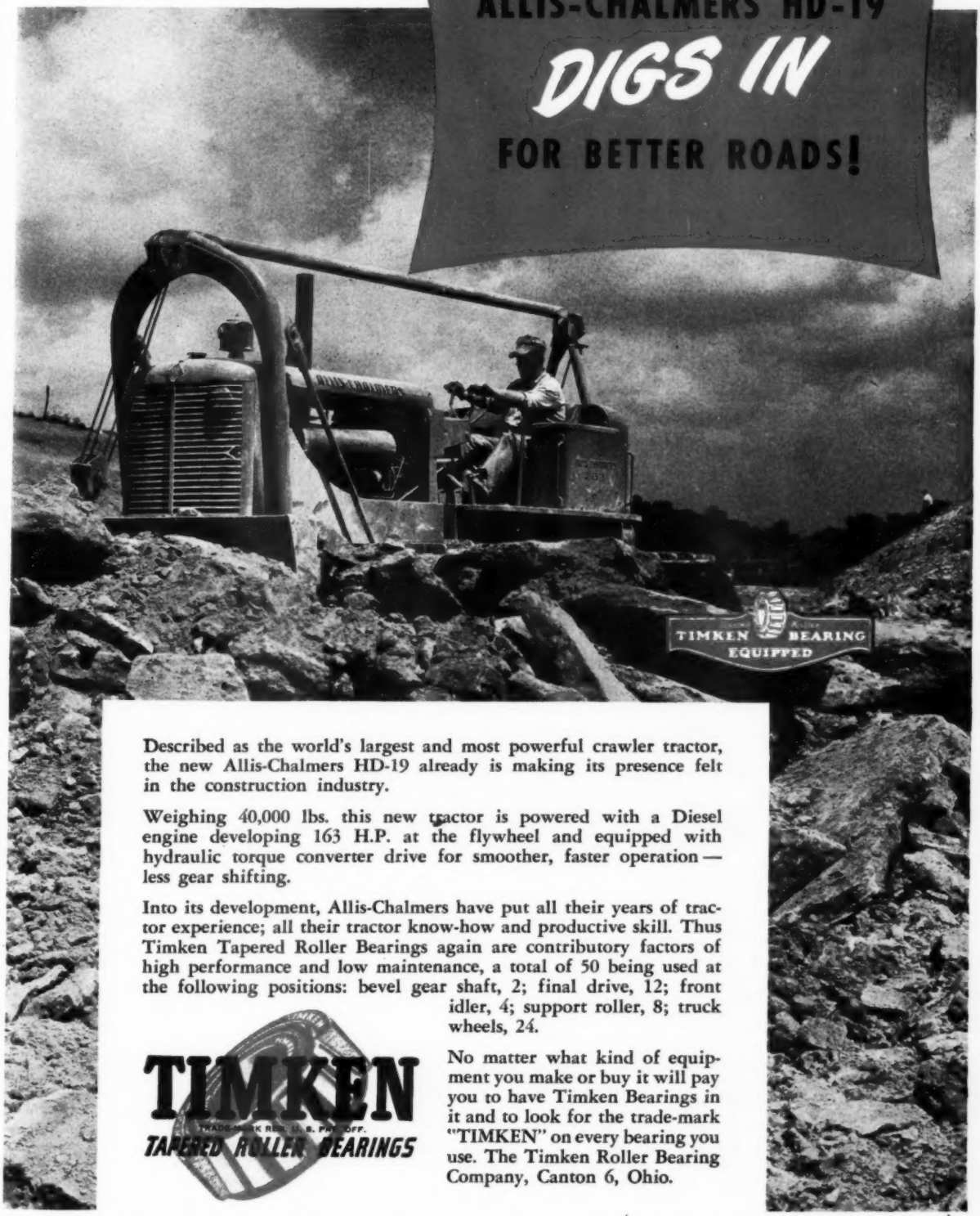
SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY

7002 CENTRAL AVENUE • CLEVELAND 4, OHIO

Allis-Chalmers HD-19 Tractor equipped with 50 Timken Bearings working on a new highway in Kentucky.

ALLIS-CHALMERS HD-19 DIGS IN FOR BETTER ROADS!



Described as the world's largest and most powerful crawler tractor, the new Allis-Chalmers HD-19 already is making its presence felt in the construction industry.

Weighing 40,000 lbs. this new tractor is powered with a Diesel engine developing 163 H.P. at the flywheel and equipped with hydraulic torque converter drive for smoother, faster operation — less gear shifting.

Into its development, Allis-Chalmers have put all their years of tractor experience; all their tractor know-how and productive skill. Thus Timken Tapered Roller Bearings again are contributory factors of high performance and low maintenance, a total of 50 being used at the following positions: bevel gear shaft, 2; final drive, 12; front idler, 4; support roller, 8; truck wheels, 24.

TIMKEN
TRADE-MARK REG. U.S. PAT. OFF.
TAPERED ROLLER BEARINGS

No matter what kind of equipment you make or buy it will pay you to have Timken Bearings in it and to look for the trade-mark "TIMKEN" on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio.

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬭ AND THRUST ⬭ LOADS OR ANY COMBINATION

tractor equipped with Bucyrus-Erie hydraulic bulldozer, a Caterpillar RD-7 with Le Tourneau cable bulldozer, a D-8 Caterpillar tractor, an 8-yd. GarWood scraper, a 15-yd. Le Tourneau Carryall, and a GarWood Rooter.

Kentucky Takes Over 345 City, County Road Miles

The Kentucky state highway department has assumed the maintenance of 345 miles of Kentucky's city, county and state park and institution roads since January 1, 1944, and is in the process of taking over an additional 235 miles, according to a report by H. H. Palmer, Department Maintenance Director.

Responsibility Limited

Commenting on the report, Highway Commissioner J. Stephen Watkins said the total amount of roads for which the state has assumed the responsibility of upkeep now stands at 10,361 miles. "The state provides all repair and maintenance on these roads but is not responsible in the case of city streets for policing them or keeping them clean," he added.

In the approximately four-year period since January 1, 1944, the state has taken over 277.048 miles of county roads, 46.244 miles of city streets and 22.665 miles of roads at state parks and institutions. Palmer said prior to 1944 no state park or institution roads were under state maintenance.

• Rapidly loaded with road gravel by an International-powered, TD-14 Bucyrus-Erie bulldozer, these 10½-yd. International-drawn Mississippi wagons haul material at speeds up to 25 m.p.h. for District 4, Amite County, Miss.

Largest Secondary Road Fund for Virginia in '48

The Virginia department of Highways has announced allocations totaling $20,079,676 for maintenance and construction of the State's 38,000-mile network of secondary highways for the fiscal year beginning July 1, 1948.

Including $2,108,035 in Federal-aid secondary funds, this allocation marks the largest single appropriation ever made for secondary road work in Virginia. During the current fiscal year, allocations total $18,453,378.

The Department also announced a $20,000,000 allocation for construction on the 9,000-mile primary system of highways in the State during the fiscal year 1948-49.

Nearly All Mileage Improved

Virginia is one of four States in the nation which is charged with the administration of virtually the entire rural road network within its boundaries. The State took over the county roads in 1932 and since that time has slashed unimproved secondary mileage from 25,000 to 5,000.

Handling Federal-aid secondary funds for Virginia was a relatively simple matter since farm-to-market roads come directly under the Highway Department. Accordingly, virtually all of the entire first year funds have been let to contract and a good part of the second year fund has been programmed.

Emphasis on secondary roads in Virginia last year led to the accomplishment of a unique record—not one school bus day lost due to mud on the roads during the session of 1946-47.

Approve S. C. Highway Bonds

Gov. J. Strum Thurmond has approved the request of the South Carolina state highway department for sale of the $10,000,000 highway certificates of indebtedness for construction of farm to market roads.

In requesting such approval, Chief Highway Commissioner Claude R. McMillan said that "in our opinion, the income of the highway department is sufficient to meet operating expenses; to service the presented funded debt; to maintain highways in serviceable condition; to construct roads contemplated in this year's program; and to provide for redempting of proposed certificates of indebtedness both as to principal and interest as they mature."

SAUERMAN
Long Range Machines

Slackline Cableway Digging Gravel from Deep Pit.

Portable Scraper Machine Loads from Pit to Trucks.

Dig, Haul and Dump
for a few cents a cubic yard

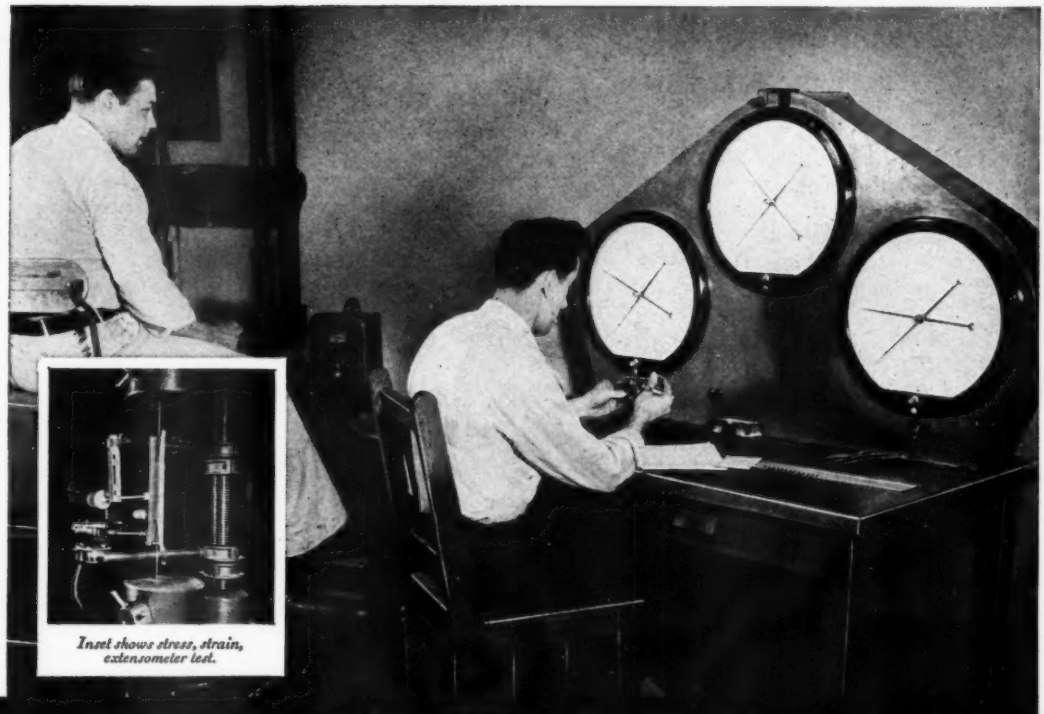
PROFITS in digging and hauling sand, gravel, clay, blasted rock, etc., depend on using the simplest equipment that will handle the required yardage in the shortest space of time. Often it is found that only a Sauerman Scraper or Cableway meets all of these requirements.

These machines span large areas—dig and move material from point to point at a rapid rate. First cost is reasonable, maintenance expense is small and the simplicity of operation permits easy one-man control of even the largest unit.

There is a size and type of Sauerman machine to meet every capacity requirement from ten tons of material an hour to many thousands of tons a day. And each machine, large or small, offers greatest possible economy of power and labor in its appointed task plus rugged dependability and long years of service.

WRITE FOR CATALOG

Sauerman Bros., Inc.
574 S. CLINTON ST., CHICAGO 7, ILL.



Inset shows stress, strain, extensometer test.

How to Measure the Muscle in Rope Wire

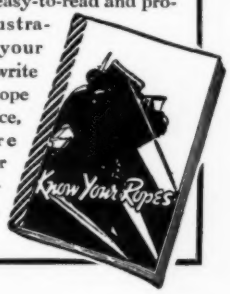
Measuring the muscle—or tensile strength—of rope is one of many important tests used in grading Wickwire Rope. And the engineers who supervise these tests are tough taskmasters.

Before they release a single coil of wire to the Rope Mill, they take two samples from each end of every coil. These samples are gauged for size and roundness. Then the wire is subjected to the extensometer test, the tensile, torsion and elongation tests. Tolerances are even more exacting than those established by the industry; any wire not meeting the standards is rejected. Colored tags listing size, strength and other data are affixed to acceptable coils. These tags stay on the coils until they are made into wire rope—and the data they contain is kept on file for future reference.

This meticulous adherance to standards characterizes every phase of Wickwire Rope fabrication. Coupled with the services of Wickwire Distributors and Rope Engineers in specifying the rope with the right kind of muscle to do your hoisting or hauling job, it is your assurance of the utmost in performance, safety and long rope life. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed. Next time you order wire rope make it Wickwire Rope. After checking its performance we feel certain that you'll keep on ordering it.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write —Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.



WICKWIRE ROPE

CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Fort Worth • Houston • New York • Philadelphia • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

Colossus

(Continued from page 25)

made on the concrete monolith job. To date 20 out of a total 37 monoliths of the concrete section have reached an average height of 75 ft. from foundations. The monoliths are raised alternately in 5-ft. lifts, averaging one ft. per day. Steel forms used were fabricated by the Blaw-Knox Co., and this is the first high dam construction on record to use this method according to the project engineers.

Concrete is poured into forms from two 8-yd. Insley air-operated gravity-dumped buckets, transported via the cableway. With the exception of face form pourings (usually a 4-yd. load), the full 8 yds. (12 tons) are dumped at one time. The concrete used contains 3½ bags of cement per cu. yd. of concrete (blend of 25% natural and 75% Portland). A water ratio of 7.2 gals. per bag is used with a maximum of 6-in. size aggregates in the usual mix. As concrete is placed in forms, it is compacted with 50 Chicago Pneumatic No. 519 electric vibrators.

14-Day Water Cure

The requirements include 14 days of constant water curing. The importance of this procedure is emphasized by large signs placed above the forms undergoing water treatment: "Do not tamper with or turn off this water —if found not running please notify the Superintendent's office at once!" As the monoliths are poured wooden forms for necessary interior operating rooms, passages, stairways and other openings within the concrete structure are placed.

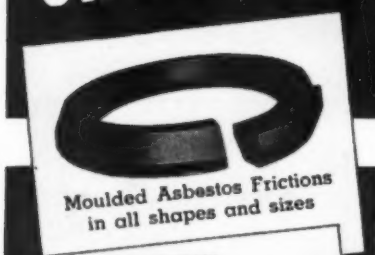
A problem arose while pouring the monoliths on the far end near the tail tower where the overhead cableways come together. Here, pouring in sides of forms having their greatest width at the base (172-ft.), and with the tail tower located at the center, requires outhauling of the 8-yd. concrete buckets. A Link-Belt Speeder 308 crane with its boom lowered to horizontal position pulled the loaded buckets as much as 80 ft. off-center. This unavoidable strain on the overhead cables, although accompanied by much "singing," caused no serious difficulty.

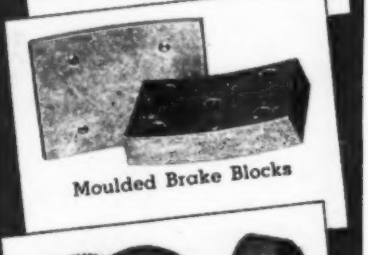
Grout Into Bed Rock

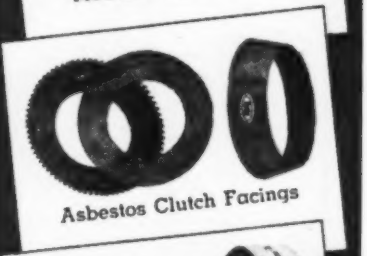
One of the important passageways within the base of the concrete section is the 6x8-ft. grouting tunnel that will run its length. From this tunnel, 3-in. grout holes will be drilled on a 20 degree angle upstream 175 ft. into the bedrock and filled with concrete to produce a grout curtain along the entire length of the concrete section.

Every 10 ft., paralleling the grouting, will be a 100-ft. verticle inspection tube to check any possible seepage or shifting of the concrete structure. If such conditions are found, additional grouts will be drilled in that locality until the situation is corrected. This feature plus the fact each of the monolith cubes represents a dam by itself is expected to produce an "impregnable bulwark."

The other interior rooms will contain the operating gallery for the ten 37x50-ft. flood gates along the 590-ft. spillway at the top of the concrete section. Below the


Moulded Asbestos Frictions in all shapes and sizes


Moulded Brake Blocks


Asbestos Clutch Facings

Brake Lining in Rolls for all requirements

GATKE
Custom-Bilt
Brake Materials

Contractors and Suppliers everywhere report increased output and wonderful economies effected by GATKE Swing Frictions, Brake Lining and Clutch Facings.

The smooth, uniform action under all service conditions gives operators confidence — avoids strain and fatigue—helps keep things moving faster without delays.

The long wear life avoids interruptions for adjustments and replacements.

Whatever the service, GATKE has what it takes to get the job done. For recommendations just send application information.

GATKE
CORPORATION
232 N. LaSalle St., Chicago 1

For the *Toughest* Service on Powered Wheels

The GENERAL LCM

for

Logging

Construction

Mining

New Angle Pulling Power •
More Rubber • Greater Traction

Squeegee Power Cleats • Ejection Action

Snag-Resistant Tread and Sidewall
Heavy Shock-Absorber Plies

Buttressed Highway Rib • Reinforced, Extra Heavy Beads

Natural Rubber Impact Cushion
Deeper, Cool-Running Shoulders

The GENERAL L.C.M.

THE GENERAL TIRE & RUBBER CO. • AKRON, OHIO

spillway and near the base will be six sluices with control rooms. The sluices are small openings through the monolith for emergency drainage of the reservoir. The power intake consists of six Chicago Bridge and Iron 20-ft. diameter penstocks which have been installed. Through these giant tubes the main force of the impounded pressure of the reservoir will be directed into the turbines of the future power house plant.

Long Way Around

Over on the high side are located the aggregate, batching plants and controls for the cableway. To provide access to the high side operation, S. A. Healy constructed a swinging bridge used by personnel, electric, communications and water lines. Materials that have to be hauled to the high side must be taken in trucks on a 37-mile trip over existing roundabout roads.

"Be careful, Baxter, that little tractor has a fast clutch!"

Cement arrives at the high side batching plant from the railhead in Jamestown, Tennessee, nearly 50 miles south of the project. It is transported to the job in special sealed 60-bbl. steel drum Trailmore trailers pulled by White trucks. Upon arrival, the cement is transferred by a Robinson air activator and conveyors to either batching bins or storage silos. Over 1,400,000 bbls. of cement will be needed to construct the concrete section of the dam.

Separate Quarrying Operation

Cumberland Quarries, Incorporated, located 14 miles southeast of the project, supply all rock material for the project's aggregate

Front - End
LOADERS
For Industrial Tractors
Extensible Booms,
5/8-cu. yd., Bucket 8-foot lift,
Backfiller Blades
White Mfg. Co.
ELKHART INDIANA

Get a Line on an Owen!
OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAY'S WORK
with a MOUTHFUL AT EVERY BITE
For faster digging, ease of handling on difficult jobs and lowered operating costs, "get a line on an Owen Bucket".
Owen designs and builds to meet your every general or specific requirement.
The workings of an improvement-conscious engineering department are evidenced in field performance everywhere on dredging, excavating and material handling jobs.
The OWEN BUCKET CO. 6095 BREAKWATER AVE. CLEVELAND, OHIO
BRANCHES: New York, Philadelphia Chicago, Berkeley, Calif.

Write FOR THE NEW CATALOG

plants. This concern was organized in 1941 by Normal Kelb, a well known quarry operator from Indianapolis, Indiana.

Before the early sub-contract was terminated by the war, the quarry had nearly completed installing its 500-tons-per-hour crushing and screening plant and had on hand the necessary hauling and excavating equipment. But very little of the required excavation of the quarry was underway. Healy had then completed the installation of the projects aggregate and batching plants on the high side.

During the intervening war years while the entire project was closed, Kelb moved his excavating equipment to other jobs but at the request of the government left a stand-by crew in charge of the maintenance of the machinery. In 1946, when the project was resumed, Kelb was given a separate contract by the government to produce and deliver stone from his quarry.

In choosing a site for the quarry it was necessary that it be located on or near the hard-surfaced access road leading to the high side operation. A suitable site was determined after a thorough search of the entire area for the highest quality and abundance of limestone obtainable. But when excavation of the chosen quarry face began an unexpected problem developed.

Discover Waste Seam

The quarry people were expecting from 8 to 10 ft. of overburden and a 130-ft. rock face. Instead they discovered, after removing the overburden and starting into this face, a parting at 30 ft. composed of 8 to 14 ft. of a shaley limestone seam, leaving only 90 ft. of unbroken face. This fault condition was solved, fortunately, before demands on aggregate material grew too heavy by adapting to a two-face mode of operation.

One 2½-yd. Bucyrus-Erie 54-B shovel removes overburden and loads to a 9-yd. Euclid rear dump. After the overburden is removed, three Cleveland wagon drills put down 2½-in. holes in the upper face. Following blasting, the broken rock is loaded into other Euclids by another Bucyrus-Erie 54-B. The Euclids haul upper face material down a 20% grade for 1500 ft. to the primary crusher.

The 90-ft. lower face is drilled by four Keystone 51 gasoline powered well drills in 6-in. holes the full depth of the face. Holes are 20 ft. apart, on a line 18 ft. back from the face. The rigs average nearly 3-ft. of depth per hour. Secondary drilling in oversize rock is going on constantly using 4 Cleveland H-10 jackhammers, Hercules powder with electric caps is used for blasting on a ratio of a pound of powder per 2.1 cu. yds. of rock on face blasting—performed in the evening after close of operations.

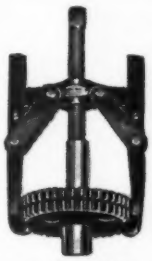
Lower face rock is loaded by a 2½-yd. Marion shovel into four 6-yd. Koehring Dumptors which haul 500 feet to the primary crusher. Altogether, the units handle over 4,000 cu. yds. of rock per day.

The quarry gives the material its primary crushing in 4x5 Allis-Chalmers and 36x42 Traylor jaw crushers which feed material over Allis-Chalmers Ripl-Flo screens. All material is reduced to a maximum 6-in. size for delivery to the project.

Cumberland Quarries hauls material to the crushing plants in 11

SURPLUS STOCK SALE!

151 Brand New Gear and Wheel Pullers



Popular Size Model No. 1004

The harder the pull, the tighter the arms hug the work. Made of heavy one-piece forged steel yoke. Heat treated forged steel arms and straps.

Will take gears, wheels, etc., up to 18" in diameter.

Diameter	18"
Reach	15½"
Diameter, Screw	1¼"
Length, Screw	16"
Hole adjustment	3 hole
Weight	40 lbs.

Bargain Price $22 ea. F.O.B South Milwaukee

Bucyrus-Erie Co.
South Milwaukee, Wis.

45 TONS
OF 15 FOOT PENSTOCK TUBE
is successfully transported on this
ROGERS HEAVY DUTY TRAILER
Extreme lengthwise and crosswise axle oscillation is attained in the rear end design of this type D Trailer. This load rides evenly and easily as the trailer wheels readily conform to roadbed irregularities.
EXPERIENCE builds 'em • PERFORMANCE sells 'em

ROGERS BROTHERS CORPORATION
DESIGNERS and BUILDERS of HEAVY DUTY TRAILERS SINCE 1915
136 ORCHARD ST. ALBION, PENNA.

White-truck-drawn 12-yd. McCabe trailers. Similar equipment is operated by hauling sub-contractor R. R. Webb, Shelbyville, Kentucky. Hauling roads from the quarry, as well as those from Jamestown, Tennessee, lie in rolling and semi-mountainous terrain with a few 10% grades typical of the Kentucky hill-country.

Secondary crushing and screening preparation of the aggregates at the high side is in a plant built along the brink of a ravine. Into this ravine, prepared aggregates are spilled from six conveyors, each passing a different sized material. Stepping down the ravine are six surge piles of aggregates built up over a tunnel-type conveyor which feeds the material to the 1,350-ton capacity bins on the brink of the 400-ft. high side cliff above the batching plant. The sizes of aggregates produced vary from 6 to ¾-in. The minus ¾-in. material is directed through a series of hammermills and roll crushers to produce stone-sand for the concrete mix.

In the batching plant, the aggregates and cement are mixed (in warm weather with water cooled to 35°F. by means of a Frick refrigeration plant) with water in three Koehring 4-cu. yd. tilt-type concrete mixers. After mixing, the batch is discharged into the wet batch hopper. The plant produces over 2,000 cu. yds. of concrete per day. A specially designed 8-yd. transfer bucket, mounted on an old railway flat car and powered by a Cummins diesel motor, is positioned under the hopper. This transfer vehicle carries the batch over a standard gauge track (laid along a ledge on the 400-ft. cliff) to the loading platform where it fills the overhead cableway buckets by gravity.

A Porter locomotive is used to transfer concrete from the wet-batch hopper to the loading platform. A Rex 200 single drum Pumpcrete has been set-up on the monolith sections for pouring small forms and to speed-up concrete production.

New Cofferdam Going Up

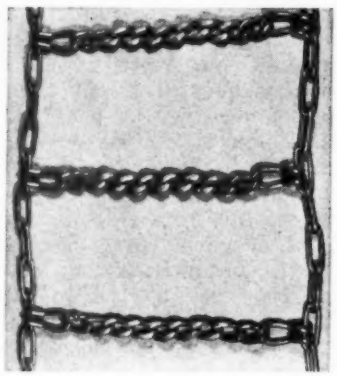
A new cofferdam is being erected to the mid-point of the river to allow construction of new monoliths. This cofferdam ties into the earth cofferdam erected at the beginning of the operation. It is constructed of Inland Steel pilings put down by a McKeirnan-Terry hammer swung from a Bucyrus-Erie 54-B crane. After the pilings are placed, the resulting circular units are filled with overburden from the old earth cofferdam by another Bucyrus-Erie 54-B swinging a 2-yd. clamshell bucket.

From this new cofferdam, a

KEEP YOUR EQUIPMENT ROLLING

Hard Face Your Chains with

COLMONOY



If your equipment requires tire chains, play safe! Hard-face the "wear spots" with Colmonoy No. 6. Your chains will wear 4 to 5 times as long. Work will proceed without interruption.

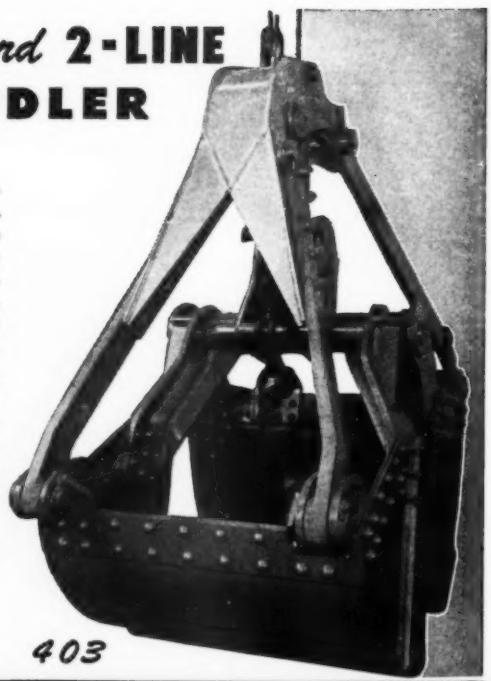
There are many grades of Colmonoy—a grade for every hard-facing need. For greater wear on dipper teeth, bulldozer blades, buckets, etc. USE COLMONOY. It wears, and wears and WEARS.

ORDER TODAY

Order a 5 lb. package of Colmonoy No. 6 today—for tire chains. We will also send you full information on the Complete Line of Colmonoy Hard-facing Alloys.

WALL COLMONOY CORPORATION
Hard Facing Alloys
19345 JOHN R STREET • DETROIT 3, MICHIGAN

ERIE *Standard* 2-LINE REHANDLER



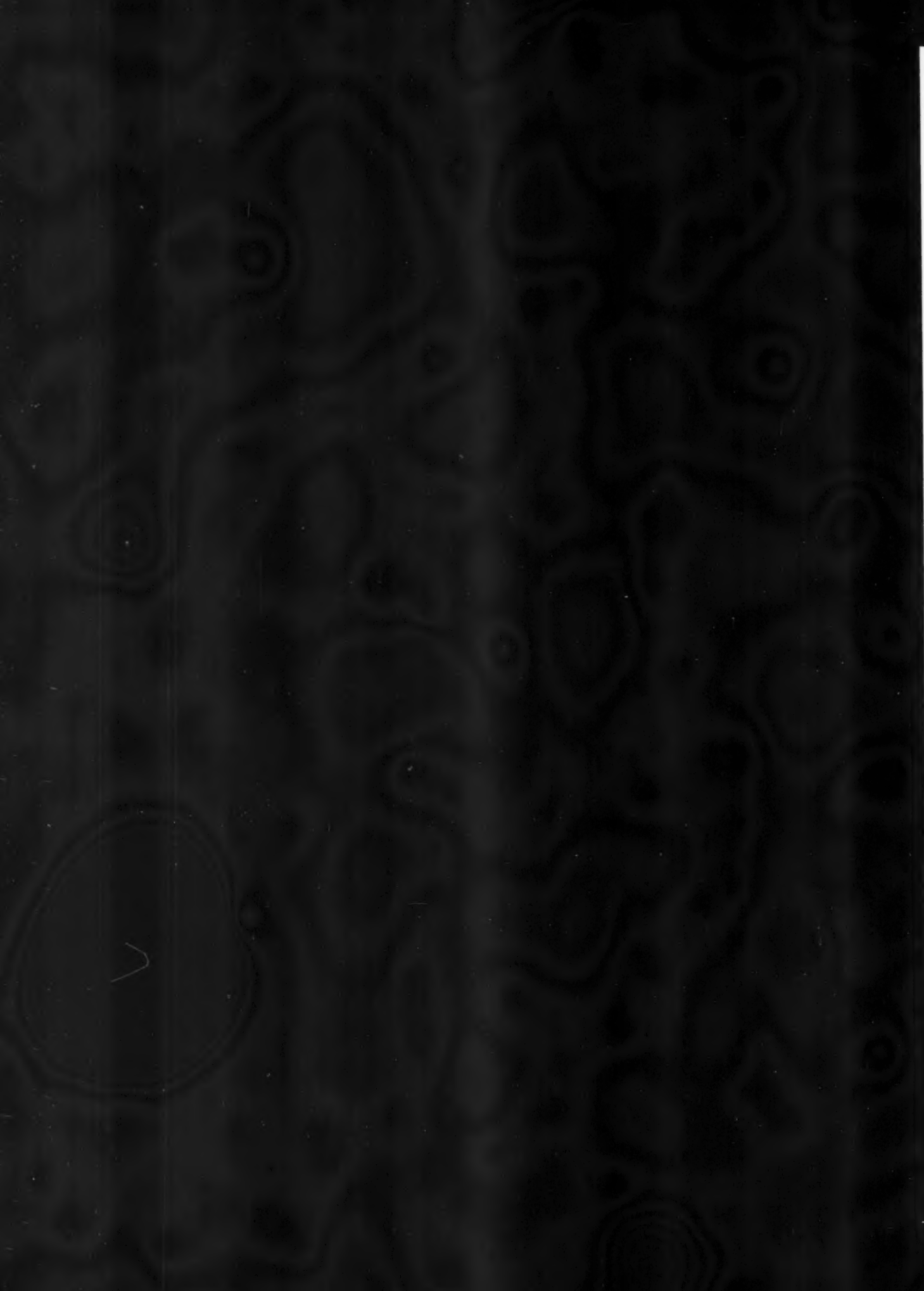
THIS compact Lever Arm Rehandler Bucket of normal proportions has ample closing power to fill to capacity in compact materials, and is so designed that the reeving can be adjusted to obtain maximum speed with capacity grabs in loose materials. We have reduced the "height open dimension" thus requiring minimum headroom, enabling you to pile higher and to discharge into higher hoppers. Lighter weight alloy construction provides more pay load (scoop contents) less bucket dead weight. To see this bucket in all detail write for bulletin 403.

● *Write for Booklet 403*

ERIE BUCKETS • *A Complete Line*

Erie Steel Construction Co., 481 Geist Rd., Erie, Pa.

BUCKETS • AGGREMETERS • PORTABLE CONCRETE PLANTS



HYSTAWAY for ACTION

Hyster Hystaway mounted on a "Caterpillar" track-type tractor means *more work production.*

Hystaway is 3 production tools combined in one machine—dragline, clamshell and crane.

This 3-way tool does everything that a dragline, clamshell or crane can do—plus bulldozing work—*and costs less!* Equally important, Hystaway can be mounted on the tractor by 2 men in 2 hours and taken off in 1 hour (after the initial installation).

Hystaway is made for "Caterpillar" D8, D7 and D6 tractors—new or old. Hundreds of Hystaways are in use on all kinds of construction jobs, all over the world, cutting production costs, speeding work schedules, earning dividends for their owners. Your "Caterpillar" distributor can arrange a demonstration.

CURRENT DELIVERY. Best news of all—you can get current delivery from your "Caterpillar" distributor. Write for detailed literature.

HYSTER COMPANY

2976 N. E. CLACKAMAS, PORTLAND 8, OREGON
1876 NORTH ADAMS ST., PEORIA 1, ILLINOIS

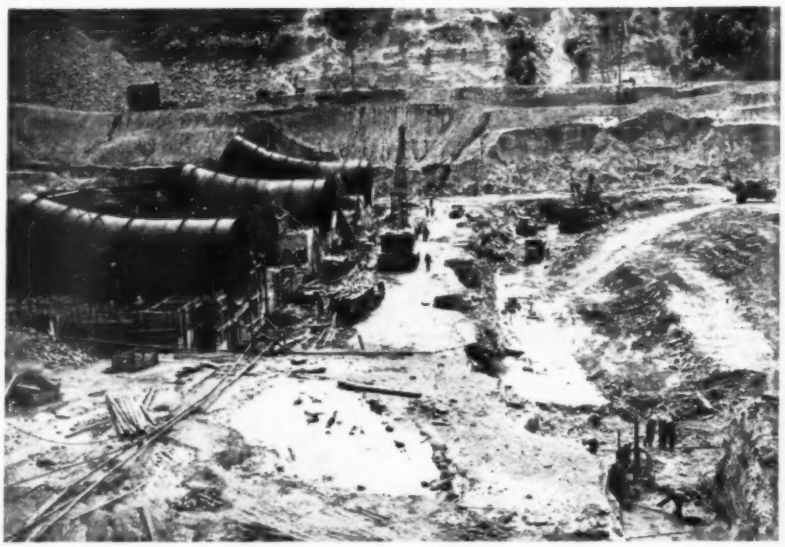
HYSTER

new swinging bridge has been erected across the river for use of personnel. On the opposite side, at the base of the 400-ft. cliff, the Link-Belt 308 with shovel front-end is excavating loose rock and overburden from an area where a cofferdam will be constructed to join with the newly constructed coffer in the river. The water in the river will be diverted through the space required for two monoliths. When all other monoliths are finished the river will then be diverted into the sluices and the remaining monoliths installed.

The Standard Oil Company of Indiana supplies all lubricants and fuel for the project. The project is isolated and the contractors are especially careful to keep their equipment and tools in top-notch condition. Most of the operators of all excavating equipment are veterans of considerable experience.

All working areas such as the borrow pits, monolith forms and aggregate plants are brilliantly illuminated for night operations. Jones-Wright employs over 900 men, mostly residents of the area, divided into the following shifts: earth, two, 8-hr.; concrete, three, 8-hr.; aggregate and concrete plants, three, 8-hr.; and the quarry runs, two, 8-hr. shifts.

To encourage peak production, the contractor has erected near the time and payroll office a large three-colored score board showing the results by the shift of the previous day's output in all phases of the operation. The amount needed to beat the best previous week's record is indicated in a special column. If any shift falls behind it is noted by large red figures. This score board has attracted wide attention among the men, encouraging friendly competition between shifts. At present the swing-shift appears to have a slight margin over the others by a month's lead.



• Masonry work runs 'round the clock on three 8-hr. shifts. Above is a night-time view of the monoliths with penstock in place. Rigs in the daytime shot (below) are Bucyrus-Erie 54-B's excavating blasted rock and handling forms. Wagon drill at bottom right is a Chicago Pneumatic G-200R working in the powerhouse excavation.

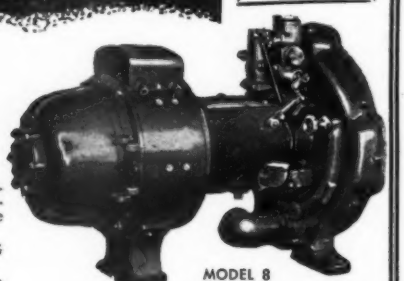
Project Personnel

The Jones-Wright Construction Company's key men on the project include: H. V. Appen, General Superintendent assisted by W. B. Kirk, Clyde Caylor, A. L. Crawford, C. W. Baldwin and others. The Cumberland Quarries, Incorporated key men are: Norman

MOON Generators TURBO and BELT DRIVEN
for LIGHT and POWER
The Ideal Small Power Plant

IMPORTANT MOON FEATURES

- GOVERNOR AND COMPOUND WINDING on steam-driven models prevent excess voltage output which might injure electrical equipment.
- ONLY 2 EASY-TO-REACH OILING POINTS.
- AUTOMATIC CUT-OFF on larger capacity steam-driven models prevents overload damage to generator.



MODEL 8 (STEAM)

For Lights . . . Ventilating Fans . . Other Electrical Equipment . . .

SEND TODAY FOR ILLUSTRATED CIRCULARS. MODELS FROM 1 TO 7½ KW CAPACITY.

Moon MANUFACTURING CO.
ESTABLISHED 1893
122 N. JEFFERSON ST. . . . CHICAGO 6 . . . ILLINOIS

Kelb, President assisted by Herman Nagel, A. B. Johnson, Clarence Lowe and others.

The U. S. Engineers Corps, Nashville District is headed by Col. H. V. Canan, USA. On the job, field construction is under the direction of James I. Bowman, Resident Engineer. A. C. Bogaty is Ass't. Resident Engineer, and a staff of 60 men make up the Corps personnel on the project. These men all live on the project site in dormatories or with their families in 20 war-surplus houses provided by the government. They also have a commissary and restaurant.

When the dam is completed and starts to build up its reservoir, the entire valley area to be impounded will be cleared of all buildings, trees and other obstructions. Relocation will be necessary at Burnsides, Kentucky —approximately 60 miles above the dam—where half of the town will be moved to higher ground along with two highways with bridges, and the bridge of the Southern Railroad. Near the dam is a small hamlet called Rowenna, Kentucky, where a ferry crosses the Cumberland river. State road 35 which now uses this ferry, will be rerouted over the top of the completed dam. The ferry will be discontinued and Rowenna completely removed.

Wolf Creek Dam will create a reservoir extending nearly 90 miles upstream flooding an area of 63,530 acres during flood stages. The land to be diverted to water storage will be more than compensated by the protection of thousands of acres of valuable farm lands downstream, long threatened by destructive flash floods.

The electric power output from the proposed future power house of this dam is estimated in theoretical amounts of energy at the power plant high tension bus to total an average of 700,000,000 kilowatt hours per year. This project has no connection with TVA dams; its future power output will probably be used by the Kentucky Utilities Corporation, a private company.

Construction of this project is not only vast in areas covered, long hauling distances with 24 hour schedules to get the materials to the project, but outdraws the majority of construction projects underway today. It is truly the "Colossus of the Cumberland."

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
32-54 Church Street
New York, N. Y.

DREDGES

HYDRAULIC
DIPPER
CLAMSHELL

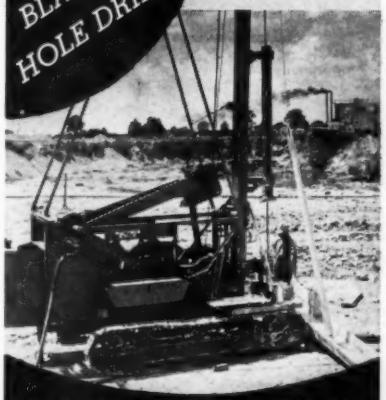
Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

BLAST HOLE DRILLS THAT SAVE



Bucyrus-Erie blast hole drills make substantial savings for owners because of their fast drilling action, all-steel construction, low fuel consumption, mobility, speedy tool changes, and quick, accurate control. It will pay you to investigate them.

13B46

SO. MILWAUKEE BUCYRUS ERIE WISCONSIN

save time between jobs with JAHN TILT TRAILERS

Tilt—load—and you're off in a matter of minutes with a Jahn Tilt Trailer. No jacks or loading ramps required. One-man operation. Positive, automatic safety lock holds platform in position when loaded or empty. Rubber mounted drawbar absorbs road shocks and protects both truck and trailer. Ideal for transporting tractors—rollers—compressors —shovel-loaders—mixers, etc. Jahn Tilt Trailers are available in 8 ton capacity tandem axle and 5 ton capacity single axle models. Write for specifications and illustrated bulletin or see your nearest Jahn distributor.

JAHN TRAILERS ALL OVER THE WORLD

C. R. JAHN COMPANY

Dept. 1349—1106 W. 35th Street, Chicago 9, Illinois

Heavy duty trailers from 5 to 100 tons

FAST Rubber-tired ... speeds to 15 m.p.h.

Backfilling requires shuttle-type dirtmoving. The Tournadozer with its fast forward and reverse speeds plus instantaneous shifting cuts down non-productive dozer time — helps you move more yards per hour.

In Scraper loading, Tournadozer's pushing power plus maneuverability in high speeds, forward or reverse, means more scrapers served per pusher . . . more units loaded per hour. Result: more payloads per day, with fewer men and machines.

Special tapered bead on giant 21.00 x 25 tires prevent tire slipping on rim . . . permit lowering pressure for extra flotation and traction to meet extreme conditions in sand, mud, snow or ice.

Extreme maneuverability makes this dozer ideal for contractor, mine or quarry clean-up. Easy to operate air-actuated driving and braking controls give accurate finishing . . . perfect operator visibility.

Tournadozer—Trademark RR16-R

LE TOURNEAU LET EQUIPMENT

See your Le Tourneau Distributor NOW for complete information

7

5

TOURNADOZER

YES, you can now have a high-speed *rubber-tired* dozer that can go anywhere in a hurry . . . do the job faster when it gets there . . . drive fast job-to-job over pavement, black top, muddy country roads or cross country.

15 m.p.h. . . . forward and REVERSE

The 180 h.p. Model C Tournadozer gives you the high speed operation you've always wanted in a dozer . . . up to 15 m.p.h. in BOTH forward and reverse . . . nearly twice as fast as crawlers.

No gear-shift delay

New constant-mesh transmission in the Tournadozer gives you instant selection of gear ratios anytime . . . without loss of momentum, or stopping to shift gears. Move selector lever to speed you want and air-actuated clutches give it to you RIGHT NOW.

Low center of gravity and wide tire tread assure greater stability . . . short-coupled wheelbase increases maneuverability.

Giant tires give traction, extra flotation in soft going

Four big 21.00 x 25 low-pressure tires assure ample flotation and traction for toughest going . . . no track rollers to lubricate . . . no expensive moving parts to grind and wear in abrasive materials. You roll on rubber instead of steel.

Speed, power, maneuverability make it a versatile tool

This big, fast, rubber-tired dozer is ideal for road construction, maintenance, backfilling, clearing and leveling land, building dams or levees, stripping, bulk material handling, and for pusher service on scraper dirtmoving.

Seeing is believing

Before you buy a slow-moving, high-maintenance dozer, see the new fast-moving, rubber-tired Model C Tournadozer in action. Your LeTourneau Distributor can give you complete information on performance, prices and delivery . . . SEE HIM TODAY.

LETOURNEAU PEORIA, ILLINOIS — HIGH-SPEED RUBBER-TIRED **TOURNADOZERS**

NOT in the Contract

Clarence Darrow was once asked to give his definition of a smart man.

"A smart man," he replied, "is a fellow who hasn't let a woman pin anything on him since he was a baby."

"I'll be 90 years old, sir, and I haven't an enemy in the world," bragged the old contractor.

"That's swell!" chorused his friends.

"Yeah," continued the old man, "I'm thankful to say I've outlived them all."

Observer: "How old are you, sir?"

Aged Mourner: "I'm 98."

Observer: "Hardly worth going home, is it?"

The home reminded you of those photos of homes in the Gay 90's. Grandma was rocking as she did her knitting. At her feet sat her four-year-old grandson. It was a picture Whistler could paint. Suddenly the little boy looked up and said: "Grandma, why are you knitting?"

Granny paused, smiled and replied: "Oh, just for the hell of it."

"Look out! Junior's going to open his piggy bank."

"You say you went to the hotel with that man because you were taken in by his story. What story?"

"He told the clerk I was his wife."

Young Bride: "Now dear, what'll I get if I cook a dinner like that for you every day this year?"

Engineer: "My life insurance."

Pa: "It's two o'clock, about time Sally's boy friend went home."

Ma: "Now, Pa, remember how we used to court."

Pa: "That settles it. Out he goes."

Foreman: "Didn't you get my letter firing you?"

Skinner: "Yup—but on the envelope it said 'return in five days.'"

Motorist: "Madam, I've just run over one of your chickens and I've come to replace it."

Woman: "Okay. Lay your egg in the chicken house."

"Isn't this antique furniture wonderful? I wonder where Mrs. Jones got that huge chest?"

"I don't know, but I've always heard her mother was the same way."

A Negro preacher asked his congregation: "What is the best thing in life?"

Deacon Green arose and said it was fried chicken. Then he spoke glowingly for several minutes on the virtues of the same.

Deacon Brown then arose and said that, while Deacon Green had a mighty good subject, he was sure the audience would agree that watermelon was the very best thing in life. He followed this statement by a speech which lasted some time.

Sister Mary, in the rear of the church, slowly raised to her feet. "Parson," she said, "you better stop this argument before some nasty-minded rascal gets up and tells the truth."

el
re
t
is
r,
er
is
,"
t
nt
w
e
y
e
ve
n
d
g
re
s.
ys
e
is
st
it
te
n
d
d
as
ee
y
is
t-
e
t.
er
e
d
er

The smoothly coordinated action of Bucyrus-Erie shovels makes digging a rhythmic dig-swing-dump routine that quickly piles up big output. Behind this precision blending of operating functions is responsive, full-feel control that practically "puts the load in the operator's hand."

Whether he is swinging, crowding, hoisting, or propelling . . . whether he is just starting the shift or finishing up . . . the operator gets exactly the power response he wants. The big cool-running clutches are self-adjusting for temperature variations, respond to lever action with a softness that eliminates jerks. The large brakes have high holding power, yet pedal pressures are low. Operating levers are long enough for plenty of feel, short enough for easy operation; a given pressure always effects the same response. Levers are conveniently arranged, too, so that the operator finds them all within easy reach.

These are a few of the reasons why operators of Bucyrus-Erie ⅜- to 2½-cu. yd. excavators can maintain a high-speed clip all through the shift, regardless of front-end type. See your Bucyrus-Erie distributor for more details about the control that gives these machines a head start in any kind of digging. And don't fail to ask about their easy convertibility for operation as shovel, dragline, crane or clamshell.

102E47C

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

New trade literature

Title: "Dozing the way" Pamphlet
Subject: This 16-page pamphlet describes and illustrates "Caterpillar" cable controlled bulldozers in action.

The diversified operations of the bulldozer mounted on various models of "Caterpillar" diesel track-type tractors are pictured to point out how this combination handles tough jobs.

The booklet contains plenty of illustrations showing the various types and sizes of tractors and bulldozer blades used on many varied jobs. Summaries of jobs ranging from the construction of ferry slips, levees, dykes and canals, logging, railroad siding repair, strip mining, and the ever present job of road construction and repair are emphasized throughout the publication.

Where to Get: Caterpillar Tractor Company, Peoria 8, Illinois. Ask for Form 10360 (Free).

Title: "The ABC's of Wrought Iron" Booklet
Subject: A 20-page illustrated booklet describing wrought iron, oldest ferrous metal known to man, has just been published.

The booklet tells in non-technical terms what wrought iron is, why it resists corrosion and withstands shock and vibration, how it is made, and how it is bent, welded, and threaded. The various services for which wrought iron pipe and plates are used in the industrial, railroad, construction and plumbing fields are also described.

Where to Get: A. M. Byers Company, Clark Building, Pittsburgh, Pennsylvania (Free).

Title: "Blueprint for Tramp Iron Removal" Bulletin
Subject: This new 4-page, 2-color bulletin describes and explains the many pieces of Eriez magnetic equipment designed for industrial processing lines.

Specific applications and the magnetic equipment necessary to do the job are fully discussed. Pertinent data and engineering drawings showing size, weight, and construction of units are also included.

Where to Get: Eriez Manufacturing Company, Erie, Pennsylvania. Ask for Bulletin 102-B (Free).

Title: Lima Shovel Bulletin
Subject: This new 24-page bulletin contains a complete detailed description of the Lima "Type 604" shovel, crane, and dragline. Many illustrations are included in the new bulletin, showing details of construction and operating features including the application of the unit's air control. Specifications, capacities, and working ranges are included.

Where to Get: Lima Shovel & Crane Division, Lima-Hamilton Corporation, Lima, Ohio. Ask for Bulletin No. 64-A (Free).

Title: Tractor Folder
Subject: A 6-page folder, describing Allis-Chalmers' new HD-19 Torque Converter tractor, is now being distributed. Some of the HD-19's features mentioned in the folder are "increased capacity, longer life, and operator comfort." Illustrations are included of the tractor's operator platform, its 6-cylinder General Motors engine, and its "Positive Seal" truck wheels.

Where to Get: Tractor Division, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. Ask for MS-608 (Free).

Title: Gravel Plant Bulletin
Subject: This colorfully illustrated 8-page bulletin describes and pictures the new "Twin Dual Master" gravel plant. Photographs and drawings show the features of this 3-stage, single-unit crushing, screening, and loading plant. Among other things the bulletin points out the rotovator, self-cleaning pulley, chip screen, and swivel drive.

Where to Get: Universal Engineering Corporation, Cedar Rapids, Iowa. Ask for Bulletin No. 682 (Free).

Title: Goodyear Rubber Booklet
Subject: Advantages and developments in the use of rubber with shaft rollers and idler sheave fillers are cited in this new brochure. The booklet is illustrated with photographs of installations, engineering tables and formulae, and lists several case histories in the copper and iron mining industry.

Where to Get: Molded Goods Division, Goodyear Tire & Rubber Company, St. Mary's, Ohio (Free).

Title: Belt Conveyor Bulletin
Subject: This new bulletin contains information necessary for laying out a belt conveyor system. In addition to giving general information, the bulletin points out such features of "Robins Idlers," as one-shot lubrication, triple grease seal, rigid truss construction, malleable iron brackets, channel bases, minimum clearance between pulleys, and uniform wall thickness of pulleys.

Where to Get: Robins Conveyors Division, Hewitt-Robins, Incorporated, Passaic, New Jersey. Ask for Bulletin No. 120-AL (Free).

Title: "This is Olson City" Booklet
Subject: This handsomely illustrated 8-page booklet informally tells the story of the Olson Manufacturing Company. Photographs and text feature the company's history and manufacturing methods. Products mentioned include Olson bulk plants, truck bodies, and low-bed trailers.

Where to Get: Olson Manufacturing Company, Boise, Idaho (Free).

TO ALL CONSTRUCTION SUPTS.
For Bigger Payload Performance
...the logical first choice is HAISS HI-POWER. Unique for Sta-in-line reeving, out-of-the-muck sheaving. Weight placed for highest digging power, with closing ratios up to 7:1. Write for facts.
Distributors in all large cities
HI-POWER
GEORGE HAISS MFG. CO., INC., 144th Street & Park Ave., New York 51, N. Y.

WAYNE CRANE

WORLD'S MOST VERSATILE SHOVEL

CRANE
CLAMSHELL TRENCH HOE
WAYNE CRANE
DRAGLINE SHOVEL

Wayne Crane answers the demand for a self-propelled job-to-job shovel while providing full 360° operation with equal stability and efficiency.

Fast swing speed (5½ R.P.M.) with smooth clutch and brake control accounts for the greater yardage of Wayne Crane. Full vision cab means safer operation.

15 FEATURES THAT SAVE OWNERS MONEY

- ONE MAN OPERATED
- SINGLE ENGINE POWERED
- FOUR-WHEEL DRIVE
- HYDRAULIC STEERING
- LEVELIZING CHASSIS
- NO CENTER PIN
- OIL IMMERSED GEARS
- FULL VISION CAB
- FULL FUNCTIONING
- 44 ANTI-FRICTION BEARINGS
- 33-1/3% OVERSIZE CLUTCH
- 30% LARGER DRUMS
- WORM DRIVEN BOOM HOIST
- 22' TURNING RADIUS
- TWO BOOMS SERVE ALL FIVE ATTACHMENTS

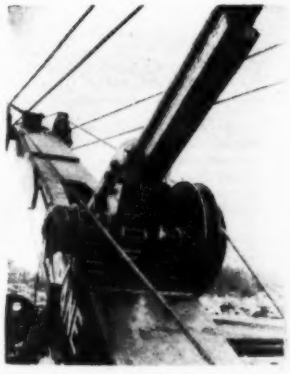
Hydraulic steering and travel brakes, oversize clutches and more anti-friction bearings at all critical points add to speed and ease of handling—cut maintenance costs. Operators like Wayne Crane. It's a "handy machine"—does more jobs easier, faster, and makes more money for owners.

ONE BOOM SERVES BOTH SHOVEL AND TRENCH HOE

The 30-ft. boom with attachments makes the Wayne Crane a ½ yd. clamshell, ½ yd. dragline or 5-ton crane.

Four wheel drive with dual tires on all wheels provides extra traction.

Wayne Crane will go wherever trucks can haul dirt.



DIPPER STICK OPERATES MORE SMOOTHLY IN BRONZE SEGMENTS

Wayne Crane's dipper stick runs true in a bronze-segment saddle block. Easy adjustment is provided to keep the rack and pinion assembly snug and free of excess "play." Wayne Crane as a shovel is equipped with heavy duty dipper with cast lip and removable manganese steel teeth.

WAYNE CRANE DIVISION
AMERICAN STEEL DREDGE COMPANY INC.

EXPORT OFFICE
80 BROAD STREET
NEW YORK 4, N.Y.

FACTORY & OFFICES
FORT WAYNE 1, INDIANA

Shovel

Trench Hoe

Clamshell

Dragline

Crane

Write Today—
Get Your Copy
of WAYNE CRANE
Specifications
and
Work Data

Mfd. by WAYNE CRANE DIVISION—AMERICAN STEEL DREDGE COMPANY INC.—FORT WAYNE 1, INDIANA, U.S.A.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces as punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15 of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

120-B dragline equipment, 90′ boom, 4 yd. bucket. Has never been used. Central location. New equipment. Box 3254

Two ½-yd. Speeders. 30-foot booms. Gas motors.
Kutchera Sodding & Fuel Company
Cedar Rapids, Iowa

Available immediately and ready to work ELECTRIC SHOVEL, Marion 32, 1¼ yd. dipper, 22 ft. boom 440 V, 3 Ph. 60 Cy. motor generator set. Long cable. Good shape.

STEAM SHOVEL, Marion 37, 1¾ yd. bucket. Good boiler and machinery. Just shut down. Will demonstrate.

The Gibsonburg Lime Products Company
Gibsonburg, Ohio

70-C and 103-C railroad type steam shovels for sale; middle western location. Box 3241

One Bucyrus-Erie Model 10-B 3 way combination, crane, shovel, backhoe; good condition throughout and new motor installed recently. Box 3240

Bucyrus-Erie 41-B electric shovel, weight 88,000 lbs. Completely rebuilt, all motors factory reconditioned. Large group spare parts included. Central location. Box 3252.

¾-yard dipper for Bucyrus-Erie 20-B shovel. Used very little and in excellent condition. Box 3258

General Electric arc welder, 200 Amps, 60/20 volts, K. W. 4, speed 1750, 60 ft. cable, mounted on Franklin chassis, powered by Franklin air cooled motor; good rubber and easily towed trailer style. Complete accessories. $250. Jos. I. Cook, Montfort, Wis.

Railroad Bridges for Sale

3—Double track half through girder bridges, 80-foot span, now in use under unrestricted main line traffic. Can be delivered in early Spring.
1—Single track half through girder bridge, 75-foot span, suitable for branch line operation. Can be delivered at once.

For detailed information contact John F. Casey Co., P. O. Box 1888, Pittsburgh 30, Pa.

New
BUCYRUS - ERIE
PARTS!
From U. S. Govenment Surplus

Parts For: 33B, 37B, 54B, and 120B. Gears, Pinions, Bearings, Bushings, Lining, etc.

Immediate Delivery From Available Stock. . . . At a Savings While They Last!

FURNIVAL
Machinery Co.
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

Trackson Model CB9 bulldozer attachment for use with Model CT9 swing crane when mounted on TD9 International Tractractor. $450.
Tri-State College, Angola, Ind.

One P&H 555 shovel front. New.

One P&H 600 shovel front. Completely rebuilt.

Duval Engineering & Contracting Co.
P. O. Box 1588 Jacksonville, Fla.

Five Koehring 7 and 8 yard bottom dump pneumatic tired tractors and trailers; tractors 4 cyl. gasoline; tires 65%. Also 1 Model D-2 B-E shovel, serial 11476, good condition, with Atlas diesel motor and 1-¼ yard Amsco rock bucket.
Milburn Machinery Co. Fort Worth, Texas

---

7 Brand new 6DT-468 Buda Lanova diesel engines, 6 cyl. 4¼" x 5½", governor set at 1600 rpm (no load). Without power take off clutch or radiator. F.O.B. South Milwaukee, Wis. Box 3225

Modern floating washing plant, capacity 200 yards per hour. Located Northern California on paved road near railroad. Available now. For particulars address owner, William von der Hellen, Box 1026, Medford, Oregon.

1—Shovel, 1¼ yd. Lorain, 75-A gasoline powered cond. perfect.
1—Bulldozer Allis-Chalmers HDW-7 Baker Blade, front mtd. pump perfect.
1—3 yd. hydraulic Gar Wood scoop w/rear mtd. pump for above tractor. 3-GMC 6x6 dump trucks w/5 yd. Gar Wood bodies & hoists new.

FALK BROS.
Belmont 5260-61
2225 Kirk Ave. Baltimore 18, Md.

SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS

2—½ cu. yd. Drag Shovel Dipper—17-B.
3—½ cu. yd. Skimmer Scoop Dipper—17-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper 42-B.
1—2 cu. yd. Rock Dipper—75-B.
F.O.B. Works

Write for any further information desired

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

ASPHALT EQUIPMENT

Cedar Rapids hot or cold mix asphalt plant, 3000 lb. capacity Model E, diesel operated, dust collector, 4 storage tanks with heating coils 35,000 capacity, 125 horse boiler complete with all pumps and piping.
Barber-Greene finishing machine, hydraulic control.
1000 gal. Etnyre distributor late model, mounted on Diamond "T" truck.
650 gal. Etnyre distributor mounted on Diamond "T" truck.
Galion 5-8 ton tandem roller, late model.
10 ton Kelly tandem roller, converted.
3½ ton Austin Pup 3 wheel roller.
Ferguson patch roller, late model.
9 wheel Wobble Wheel roller.
White tractor and 3000 gal. trailer with coils.
5 relay tanks 8000 to 1000 gal. capacity.
Grace mechanical broom trailer, axle driven.
Chevrolet flat bed truck 1938 model.
Ford flat bed truck 1937 model.
20 ton truck scales.
Cleaning machine.

CONCRETE PAVING EQUIPMENT

27 E Koehring paver.
4000′ 9 x 8 road forms.
800′ lip curb forms.
2 Lakewood finishing machines 10′ & 20′.
2 sub graders 10′ & 20′.
4 cement carts.
1 cement scale.
1 50 ton Blaw Knox bin and weighing batchers.
All equipment located in or near Kansas City, Missouri—excellent condition.

BOWEN CONSTRUCTION CO.
1914 Highland Ave. Phone: Victor 4251
Kansas City, Missouri

ALL-STEEL DERRICKS

28—30 ton capacity BRAND NEW Wiley all steel stiffleg derricks, 32′ masts, 60′ booms, complete; can furnish with gasoline, electric or steam hoists.

ALSO

Air compressors, bins, boilers, cable, conveyors, cranes, crushers, engines, hammers, conc. mixers, light plants, pneumatic tools, pavers, pumps, saw rigs, welders.

EQUIPMENT CORPORATION of AMERICA

CHICAGO 12
1170 S. Washtenaw Av.

PHILADELPHIA 2
1505A Race St.
Schaff Bldg.

PITTSBURGH 30
P.O. Box 9330

NEW YORK 7
30D Church Street

(Classified continued on page 56)

HOW TO DIG A DITCH— AND NOT GO IN THE HOLE

Yager and Sons, Beaverton, Michigan, call the 3-cylinder GM Series 71 Diesel that powers this shovel "just about the best power we've ever used." Inset shows Mr. Fay Yager, in charge of the shovel operation, who says, "You fellows just don't boast enough about that GM Diesel engine."

Shown here is a General Motors Diesel-powered Bay City ¾ yard shovel. It's doing the toughest part of a pipe-trench job—mile after mile of 6′ by 12′ trench—cutting through wet sand, swamp mud, pulling stumps, digging in the roughest kind of terrain.

Taking jobs like this in stride is everyday work for GM Diesel-powered equipment. The 2-cycle GM Diesel gives instant response to widely fluctuating power demands, operates on low-cost fuel, and delivers long, economical service.

No wonder so many operators rely on GM Diesel power to help them trim costs on close-figured contracts. You, too, will find it pays to specify GM Diesels for repowering old equipment or when buying new. Write today for complete details.

DETROIT DIESEL ENGINE DIVISION

DETROIT 28, MICH. ● { SINGLE ENGINES . . Up to 200 H. P. / MULTIPLE UNITS . . Up to 800 H. P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM
GENERAL MOTORS
DIESEL POWER

For Sale

(Continued from page 54)

New

DERRICKS

(ALL-STEEL, STIFF-LEG)

3 Available!

From U S. Government Surplus. 30 Ton at 38 ft. radius; 60 ft. Boom with Bull Wheel.

Priced At a Saving!

FURNIVAL MACHINERY CO.

5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

Rent or Sale

10-B Bucyrus shovel or dragline
1-yd. Northwest shovel or dragline
1½ yd. Northwest shovel or dragline
2-yd. Bucyrus dragline, 70′ boom
3-W Monighan or 40A Marion
2-yd. high lift Marion shovel
5W Monighan
20-yd. Marion dragline 170′ boom
A. W. NEVERS Phone 32 Mt. Pleasant, Iowa

Dredge For Sale

8 cu. ft. placer gold dredge 30′ digging depth, approximately 100′ stacker. Main power two diesel 445 hp engines—54″ x 112′ x 10′ hull. New, 1940. Box 3229

Shovel front to fit Bucyrus 43-B 1¾ or 2-yd. Box 3255

Surplus Swivel Hook Double Sheave Blocks

2 10 ton "American" 14″ swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings, grooved for ⅝″ rope. Groove diameter 12⅛″ equipped with 100 lb. cheek weights. 2½″ swivel hook. Approximate shipping weight 284 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14″ swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ⅝″ rope. Groove diameter 10½″ equipped with 100 lb. cheek weights. 2½″ swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co Dwg. 1-M-6560.

1 40 ton "American" 24″ swivel hook double sheave block diamond pattern with cast steel sheaves grooved for ⅞″ rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼″ Alemite hydr. grease fitting No. 1980 equipped with 300 lb. cheek weights and 5½″ swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Stripping shovel (high lift) 2-yd. or larger. Box 3256

5W; 7W; or 9W Monighan dragline. Box 3257

FOR SALE

2½-yd. DIESEL DRAGLINE

Marion Model 40A. 85 ft. Boom

Excellent Condition

Located No. Dakota

Dakota Collieries Co.
1017 Lumber Exch. Minneapolis 1, Minn.

USED 18″ OR 20″ ELECTRIC HYDRAULIC DREDGE. MID-WESTERN LOCATION. AVAILABLE IN 1948 BOX 3251

MECHANICS • HOME STUDY

Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully Illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐ Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐ Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid. **AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.**

WANTED: Diesel dragline and floating washing plant minimum 125 yds. per hour. Will buy, lease or work on shares. Could use dragline alone. Box 3244

WANTED: THIRTY-SIX INCH GAUGE BOTTOM DUMP CARS, FIFTEEN, TWENTY OR TWENTY-FIVE YARD CAPACITY. Box 3247

POSITIONS WANTED

Power shovel and crane operator—Bucyrus-Erie, Bay City, Lorains-Limas. Also trench machines, backhoes, bulldozers, and compressors. A-1 mechanic, age 48, with over 25-years experience. Go anywhere. Now in Baltimore, Md. Box 3242

Can operate any kind of shovel, dragline, crane or clamshell—steam, diesel, gas or electric. Can do own repair work. Experienced in quarry, ore and coal stripping. Prefer quarry or coal stripping. Familiar with grading work. Will go anywhere. Have release. Box 9254

Notes from the manufacturers

Koppers Company, Incorporated, Pittsburgh 19, Pennsylvania, has appointed R. R. Holmes Manager of the company's Tar Products Division sales department, which is responsible for the sales and sales promotion of all products produced, or purchased and resold by the division. Activities of the department are coordinated with the Staff Sales Department and the Public Relations Section.

Bucyrus-Erie Company, South Milwaukee, Wisconsin, has named Miller G. Williams Machinery Company, Incorporated, Montgomery, Alabama, as a distributor of Bucyrus-Erie ⅜ to 2½-cubic yard convertible excavators.

With a branch office at 2315 26th Street, Birmingham, Miller G. Williams Machinery Company will serve the entire state of Alabama and the following counties in Florida: Bay, Calhoun, Escambia, Gulf, Holmes, Jackson, Okaloosa, Santa Rosa, Walton, and Washington.

C. F. Winchester, construction equipment manufacturers' representative, has moved his office from 1928 Eye Street, N.W., Washington 6, D. C., to the Dendrike Building, 1010 Vermont Avenue, N.W., Washington 5, D. C.

The concerns represented by Mr. Winchester in Washington include American Conveyor Company; Fontaine Truck Equipment Company, Incorporated; Insley Manufacturing Corporation; New Holland Manufacturing Company.

Caterpillar Tractor Company, Peoria 8, Illinois, has named Jack H. Gill as Engine Sales Consultant. In his new capacity, Mr. Gill will advise, coordinate, and plan the development of engine sales with sales managers at "Caterpillar's" main offices.

Air Reduction Sales Company, New York 17, New York, has opened a new retail store for the sale of welding products at the corner of Tenth and Cherry Street in Des Moines, Iowa.

The new store will carry a complete stock of oxygen, acetylene and other industrial gases; National Carbide; oxyacetylene welding and cutting equipment and supplies; Wilson electric arc welding machines; Airco electrodes and accessories.

Granite Rock Company, Watsonville, California, announces the appointment of Royal E. Fowle to the position of Vice-President and Manager.

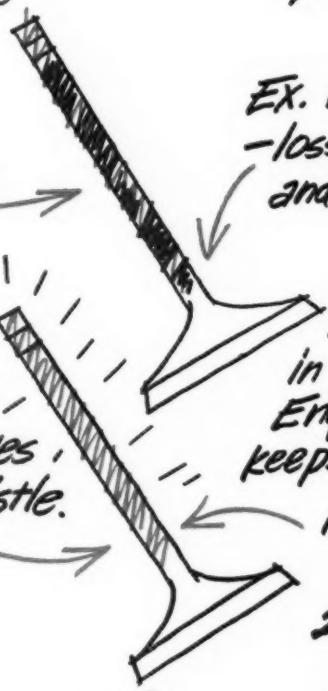
Pennsylvania Refining Company, Cleveland 4, Ohio, announces the appointment of James E. Emerick as Sales Representative for lower Michigan. He will promote the sale of Penn Drake petroleum products in the City of Detroit and the following counties: Wayne, Lapeer, Monroe, Macomb, Ingham, Genesee, St. Clair, Livingston, Jackson, Oakland, Washtenaw, and Shiawassee.

R. G. LeTourneau, Incorporated, Peoria, Illinois, has announced the appointment of Elmer E. Isgren to the position of Vice President in Charge of Production.

In his new duties, Mr. Isgren is responsible for all manufacturing operations at the LeTourneau plants in Peoria, Illinois; Toccoa, Georgia; Vicksburg, Mississippi; and Longview, Texas. He will make his headquarters at Peoria.

LUBE MEMO

Easy way to end sticky valve trouble



Sticky gum on our valves

Ex. valve on #1 isn't closing —loss of compression and power.

Nelson brags RPM DELO Oil keeps his valves clean as a whistle.

Nelson says compounds in RPM DELO Diesel Engine Lubricating Oil keeps valves free 3 ways:

1. Anti-oxidant stops gum formation
2. Metal adherent keeps oil film on stem — prevents wear.
3. Detergent cleans away carbon deposits.

Mon. — lube change due — get RPM DELO Oil

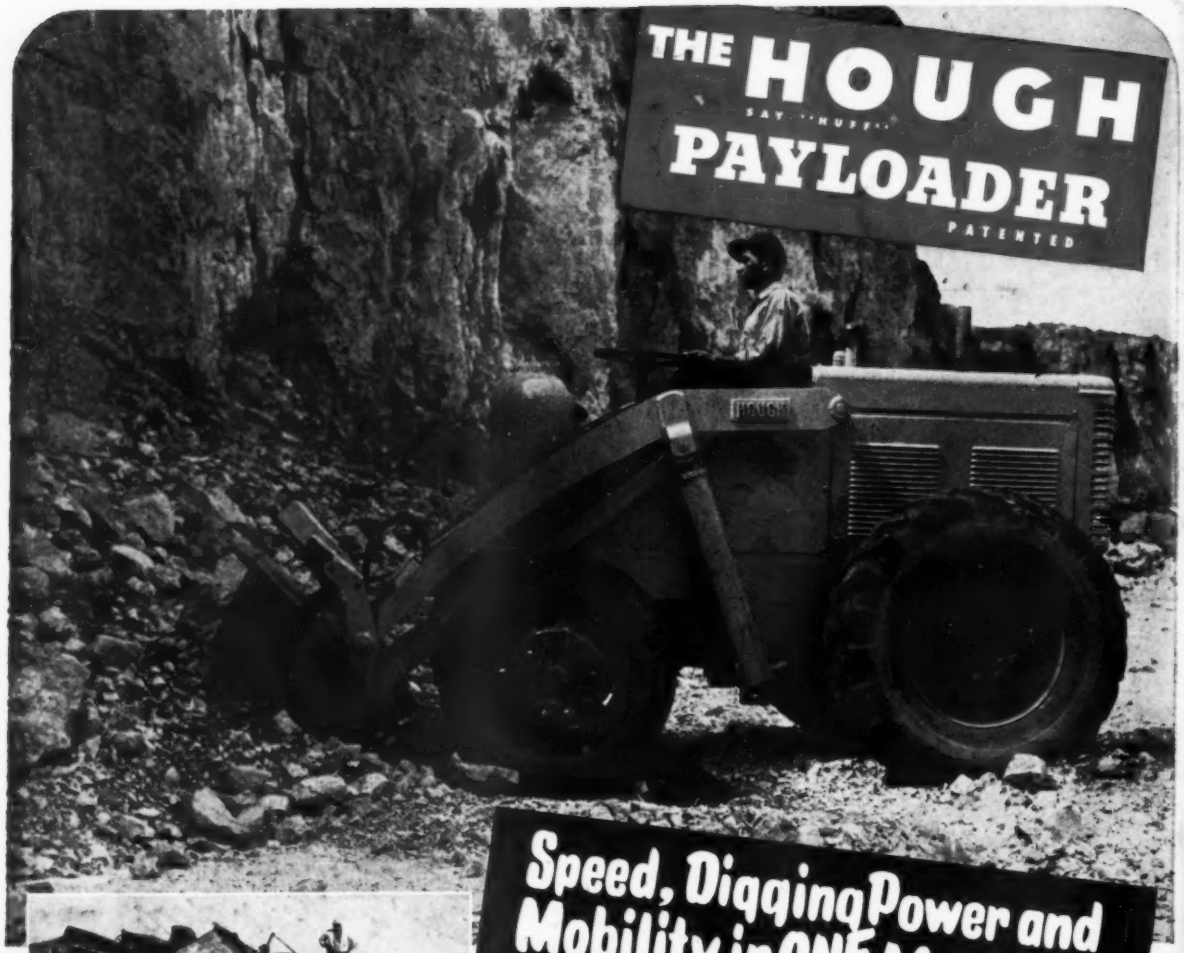
DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
THE CALIFORNIA OIL COMPANY • New York
STANDARD OF TEXAS • El Paso, Texas

THE HOUGH PAYLOADER

SAY "HUFF"

PATENTED



Speed, Digging Power and Mobility in ONE Machine!

REAL DIGGING POWER — MODEL HL LOADING BLASTED ROCK.

READILY CONVERTIBLE FOR BULLDOZER SERVICE.

The Hough Payloader is a compact package of speed, power and ability to do a big job even in cramped quarters. Designed and built as a complete unit from the ground up — close-coupled, ruggedly constructed and built low. Large tires give tremendous tractive ability and digging power to excavate at a profit. It will also load and handle a wider variety of materials faster, cheaper and better than ever before possible in a machine of this type. Several travel and working speeds both forward and reverse, make it quick to the job, fast on the job. Complete operator visibility and comfort, fingertip hydraulic control and easy steering promotes top speed output the full shift.

There's the big Model HL (1 yard bucket), Model HF (¾ yard) and Model HA (10½ cu. ft.) to choose from. Quickly attached Bulldozer Blade and Crane Hook also available. See your Hough dealer today or write for complete information.

THE FRANK G. HOUGH CO.

708 SUNNYSIDE AVE., LIBERTYVILLE, ILLINOIS

TRACTOR SHOVELS SINCE 1920